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# NUEXCO

# Monthly Report

August 1987 Number 228

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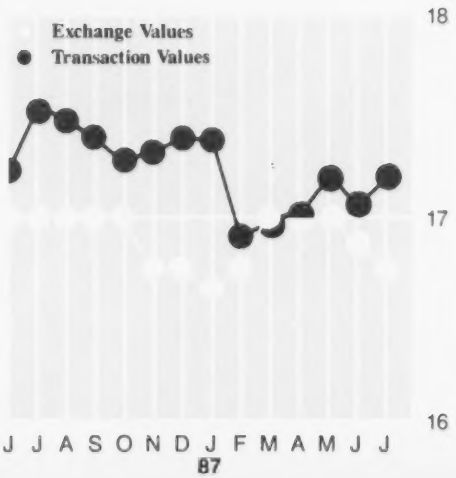

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## EXECUTIVE SUMMARY
## REPORT 228
## (All data as of July 31, 1987)

**Exchange Value $16.75, down $0.15**

The **Exchange Value** is **$16.75** per pound $U_3O_8$, down $0.15 since last month.

**$UF_6$ Value $47.50, down $0.25**

The **$UF_6$ Value** is **$47.50** per kilogram U as $UF_6$, down $0.25 since last month.

**Transactions**

**Eight** recent natural uranium sales are reported, involving **1.8 million** pounds equivalent $U_3O_8$. Seven of the sales involved spot or near-term delivery, and met the conditions for inclusion in the Transaction Value.

**Supply-Demand Ratio decreased to 1.1:1**

Active spot and near-term **uranium supply** amounts to **2.8 million** pounds $U_3O_8$ equivalent, down 850 thousand pounds since last month. Active spot and near-term **uranium demand** totals **2.5 million** pounds, up 1.5 million pounds from last month. The spot and near-term **supply-demand ratio** decreased to **1.1 to 1**.

**Transaction Value $17.30, up $0.20**

The **Transaction Value** is **$17.30** per pound $U_3O_8$, **up $0.20** since last month. The calculation includes 18 transactions involving a total of 3.7 million pounds $U_3O_8$ and equivalent $UF_6$, and covers a period of 3 months.

**Loan Rate unchanged at 3%**

The **Loan Rate** is **3 percent** per annum, unchanged.

**Conversion Value $1.90, up $0.10**

The **Conversion Value** is **$1.90** per pound U as $UF_6$, up $0.10 since last month. No active secondary market supply for conversion services is reported this month. Active demand totals 440 thousand pounds U as $UF_6$. Three conversion transactions are reported.

**SWU Value for delivery within one year: $75, up $2.00**

The **SWU Value** at .3 tails and for delivery within one year is **$75** per SWU, up $2.00 since last month. One secondary market SWU transaction is reported.

* * *

**Pricing**

The US Tenth Circuit Court of Appeals has upheld Judge Carrigan's June 1986 ruling in favor of the producers in the US Producers vs. DOE lawsuit. This section examines in detail the background and history of the lawsuit, reprints the text of the Appeals Court's decision, and discusses what legal and legislative possibilities remain to be taken by DOE and the producers.

**Analysis and Commentary**

Nuexco's forecast of market trends under restricted market conditions through 2000 shows diminishing excess inventories, increasing uncommitted supply and increasing unfilled requirements. Several restricted market scenarios are examined in which US production is increasingly stimulated, depending on degree of restriction and other conditions.

**Recent Developments**

In the recent Australian federal elections the Australian Labour Party (ALP) was returned to power. The ALP's policies toward uranium are expected to remain unchanged in the near term. Labor relations in Australia's uranium mining industry have improved under the ALP's tenure, despite the Australian Council of Trade Unions' nominal opposition to uranium mining.

Second-quarter 1987 uranium output from South Africa's Chamber of Mines producers has declined 5.9 percent from the first quarter of 1987, totaling 2.55 million pounds $U_3O_8$. Substantial drops in production at Buffelsfontein, Freegold, ERGO and Western Areas accounted for much of the decline.

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| NUEXCO REPORT 228<br>FIGURES OF THE MONTH<br>(July 31, 1987) | This Month (Report 228) | Last Month (Report 227) | 12 Months Ago (Report 216) |
|---|---|---|---|
| Exchange Value[1] | 16.75 | 16.90 | 17.00 |
| Transaction Value[1] | 17.30 | 17.10 | 17.50 |
| $UF_6$ Value[2] | 47.50 | 47.75 | 48.25 |
| Loan Rate[3] | 3% | 3% | 4% |
| Conversion Value[4] | 1.90 | 1.80 | 1.80 |
| Near-Term Uranium Supply[5] | 2.8 | 3.7 | 3.9 |
| Near-Term Uranium Demand[6] | 2.5 | 1.0 | 2.7 |
| Near-Term Supply-Demand Ratio | 1.1 | 3.7 | 1.4 |
| Recent Uranium Sales: | | | |
| Number of Transactions[7] | 8 | 12 | 7 |
| Quantity of Material[8] | 1.8 | 3.9 | 1.2 |
| Nuexco SWU Value:[9] | | | |
| at 0.3 tails assay and delivery within one year | 75 | 73 | 78 |
| USDOE SWU Prices: | | | |
| USEC | 119.00[10] | 119.00[10] | 125.00[11] |
| AFC | 153.00[12] | 153.00[12] | 153.00[12] |
| Requirements | 157.00[12] | 157.00[12] | 157.00[12] |
| Incentive Price | 90.00[13] | 90.00[13] | — |
| Market Value of Enriched $UF_6$[14,15]: | | | |
| 2.5 w/o $U_{235}$ | 447 | 443 | 457 |
| 3.0 w/o $U_{235}$ | 572 | 566 | 585 |
| 3.5 w/o $U_{235}$ | 699 | 691 | 715 |
| 4.0 w/o $U_{235}$ | 827 | 818 | 847 |

[1]US $ per pound $U_3O_8$ equivalent.
[2]US $ per kilogram U as $UF_6$.
[3]Per annum.
[4]US $ per pound U as $UF_6$.
[5]Active inquiries to sell, for delivery within 12 months after contract signing (millions of pounds $U_3O_8$).
[6]Active inquiries to purchase, for delivery within 12 months after contract signing (millions of pounds $U_3O_8$).
[7]Uranium sales only; does not include loans, conversion, or SWU transactions.
[8]Millions of pounds $U_3O_8$, equivalent.
[9]US $ per SWU.
[10]Effective 10/1/86.
[11]Effective 10/1/85.
[12]Effective 10/1/84.
[13]Effective 10/1/86, for up to 30% of annual requirements.
[14]Calculated using the Nuexco Exchange Value, Conversion Value, and 0.30 percent tails assay. From 4/30/85 to 11/30/85, calculations used the Nuexco SWU Value for DOE origin and delivery by the end of FY86. As of 12/31/85, calculations use the SWU Value for delivery within one year.
[15]US $ per KgU as $UF_6$, rounded to the nearest $.

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MONTHLY REPORT ON THE NUCLEAR FUEL MARKET

August 1987 No. 228

R. GENE CLARK, *EDITOR* CHARLES B. LEWIS, *ASSISTANT EDITOR*

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## *To Our Readers*

We are pleased to announce that Mr. Chris von Christierson has accepted appointment to Nuexco's International Advisory Committee. Mr. von Christierson has been involved in the gold and uranium industry since 1971. His background includes employment with Gold Fields of South Africa Limited. In 1978 he became Managing Director of Southern Prospecting (Pty) Limited and is currently a director of a number of public mining and exploration companies incorporated in South Africa, Canada and Australia. He holds a Bachelor of Commerce degree from Rhodes University (South Africa) and a Master of Arts (Economics) from Cambridge University (U.K.).

Mr. von Christierson has been Nuexco's representative in South Africa since 1977. He will continue as our representative there, as well as serving on the International Advisory Committee.

* * *

Included in this report as an insert is a copy of the questionnaire that was mailed to our subscribers last month. If any of our subscribers did not previously receive the questionnaire, we urge you to fill it in and mail it back to Nuexco. Your views are very important, and will help us to maintain a high level of service to our customers.

* * *

We would like to remind our readers that Nuexco's full-service subscribers are entitled to certain special services not available to our other subscribers. These services are:

- First-day Exchange Value notification via telex.
- Nuexco's Annual Review Issue.
- Four copies of the Monthly Report.

We would also like to remind our subscribers that the current Exchange Value is available by telephone from any Nuexco commercial representative, or from the editors of the Monthly Report.

* * *

Nuexco will be hosting a hospitality suite at the AIF Uranium Seminar '87, to be held September 13-16 at Keystone, Colorado. We look forward to seeing you there.

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## NATURAL URANIUM AND SECONDARY MARKET CONVERSION

**(All data as of July 31, 1987)**

The **Exchange Value** is **$16.75** per pound $U_3O_8$, down $0.15 since last month. **Active supply** of natural uranium (concentrates and $UF_6$) for spot or near-term delivery totals **2,830,000** pounds $U_3O_8$ equivalent, down 850,000 pounds since last month. The corresponding figure for **active demand** is **2,545,000** pounds, up 1,545,000 pounds. The spot and near-term **supply-demand ratio** decreased to 1.1 to 1.

The *Current Market Data* section of this Report lists eight natural uranium sales, totaling 1.8 million pounds $U_3O_8$ equivalent. US-origin uranium is commanding a premium (relative to the Exchange Value) of $2.50 per pound $U_3O_8$ (up $1.90) in the form of concentrates, and $6.50 per kilogram U (up $4.75) in the form of $UF_6$.

The **Transaction Value** is **$17.30** per pound $U_3O_8$, up $0.20 since last month. The calculation extends over a 3-month period and includes 18 transactions involving 3.7 million pounds equivalent $U_3O_8$.

The **$UF_6$ Value** is **$47.50** per kilogram U in $UF_6$, down $0.25 since last month. Three transactions involving $UF_6$ are reported, totaling 585,000 pounds equivalent $U_3O_8$. Demand for $UF_6$ remains weak, with only two major buyers in the market.

The **Conversion Value** is **$1.90** per pound U as $UF_6$, up $0.10 since last month. No active supply of secondary market conversion services is reported this month. Active demand totals 440 thousand pounds U as $UF_6$. Three secondary market conversion transactions are reported.

The **Loan Rate** is **3 percent** per annum, unchanged.

* * *

The Tenth Circuit Court of Appeals has upheld Judge Jim Carrigan's June 1986 ruling in favor of the US uranium producers, ending a year of pronounced uncertainty in the uranium market. Judge Carrigan's original ruling in the US Producers lawsuit against DOE had ordered a 100-percent restriction on the DOE enrichment of non-US-origin uranium for use in US reactors. Some uncertainty remains, however, as DOE has continued to enrich non-US-origin feed material in spite of the Appeals Court decision. DOE has taken the position that the order is not final until the Supreme Court has disposed of the issue, and has filed an emergency motion with the Appeals Court to stay its ruling while DOE prepares a petition for review by the Supreme Court. (The Appeals Court decision and related issues are examined in depth beginning on page 3.)

Immediately following the court decision, at least two US utilities purchased US-origin material. Several other potential buyers appear to be waiting to fill their requirements until further developments in the lawsuit, actions by Congress or a DOE rulemaking clarify the market situation.

As a result of the Appeals Court decision, most US producers immediately withdrew their previous offers, which had been declining in price in recent months, and substantially raised offering prices. Most appear to be offering material in the $22 to $25 range, a substantial increase over the $19 to $20 level prevalent before the decision. The premium (relative to the Exchange Value) for US-origin is $2.50 per pound $U_3O_8$, up $1.90 since last month. After the premium was introduced in December 1986 ($0.65), it rose steadily to a level of $1.50 in April and May 1987, then began declining. It reached a low point of $0.60 in June. The movement of the premium (its relationship to the Exchange Value) since its first publication is shown in Table 1.

While the Appeals Court's decision is certainly the most important factor influencing the uranium market thus far in 1987, especially in the USA, several important issues remain unresolved:

1. The likelihood and timing of DOE obtaining a stay of the Appeals Court decision are unclear, as is whether DOE's request for a Supreme Court review of the case will be granted.

2. It is unclear whether the 100-percent restriction on DOE's enrichment of non-US-origin has actually become law; if so, DOE will be forced to comply.

3. Judge Carrigan's ruling had earlier ordered DOE to commence a rulemaking proceeding that would establish a (lower) level of import restriction. DOE has not yet begun such a rulemaking. Carrigan retains jurisdiction and any such rulemaking must clearly convince Carrigan that the restriction level sought by DOE is appropriate and meets the intent of the Atomic Energy Act.

4. It is possible (and increasingly likely) that Congress will take action superceding the court-ordered restriction. The timing of such potential action is, however, very unclear at present and the outcome is quite uncertain. Efforts to find a legislative solution will not succeed quickly, as many conflicting interests must be balanced, not the least of which is the Reagan administration's opposition to protectionist legislation.

Outside the USA, the *immediate* impact of the court decision was mitigated by slightly lower prices, enabling the market for *non-US-origin* material to sustain a normal

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**Table 1**

**THE PREMIUM FOR US-ORIGIN $U_3O_8$**
**(Relative to the Exchange Value, US$ per pound $U_3O_8$)**

| Month (Issue) | Exchange Value | Premium | Premium as Percentage of Exchange Value |
|---|---|---|---|
| December 1986 (220) | $16.75 | $0.65 | 3.9 |
| January 1987 (221) | $16.75 | $0.75 | 4.5 |
| February 1987 (222) | $16.65 | $0.85 | 5.1 |
| March 1987 (223) | $16.75 | $1.00 | 6.0 |
| April 1987 (224) | $17.00 | $1.50 | 8.8 |
| May 1987 (225) | $17.00 | $1.50 | 8.8 |
| June 1987 (226) | $17.00 | $0.90 | 5.3 |
| July 1987 (227) | $16.90 | $0.60 | 3.6 |
| August 1987 (228) | $16.75 | $2.50 | 14.9 |

amount of activity during July. Thus, the Exchange Value declined $0.15 this month to $16.75 per pound $U_3O_8$. Two US and two European utilities bought substantial quantities of non-US-origin material for near-term delivery. No long-term sales are reported this month.

The $UF_6$ Value declined $0.25 to $47.50 per kgU as $UF_6$. Three transactions involving $UF_6$ are reported this month, totaling approximately 600,000 pounds U as $UF_6$. The premium (relative to the $UF_6$ Value) for US-origin $UF_6$ increased $4.75, to $6.50 per kgU as $UF_6$, in conjunction with the increase of the US premium for $U_3O_8$. Supply of US-origin $UF_6$ is weak at present. Demand is likewise weak, with only discretionary buyers in the current market.

* * *

The Loan Value remained unchanged this month, at three percent per annum. Two loan transactions are reported, involving approximately 700,000 pounds $U_3O_8$ equivalent. Although some material is available for loan, little or no demand exists at the present time.

* * *

The Conversion Value rose $0.10 since last month, to $1.90 per pound U in $UF_6$. Three conversion transactions are reported, totaling about 800,000 pounds U as $UF_6$; however, the secondary market for conversion services remains relatively inactive. Prices for conversion services in Europe continue to be higher than in the USA. Firm supply currently is lacking in the market, and demand is limited to one potential buyer of conversion services.

## ENRICHED URANIUM AND SWU

The SWU Value increased $2.00 this month to $75 per SWU. One SWU transaction is reported in the *Current Market Data* section of the Report. The current SWU Value represents an approximate mid-point in a wide range of prices that characterize the highly segmented secondary SWU market.

At the higher end of the market, Eurodif and Urenco SWU are available at prices several dollars above the current SWU Value, while at the lower end, SWU from other suppliers might be acquired for under $70 per SWU, although additional commercial constraints can raise the effective price to the buyer. If DOE cannot enrich non-US-origin feed material for its US customers, and those customers begin contracting for their enrichment from other sources, there is a potential for further firming of prices for all non-DOE SWU.

At present, near-term SWU demand remains thin, with only one firm buyer in the market for a small quantity of SWU, and another investigating the available options for purchasing in the secondary market.

The market for DOE SWU has become weaker since the Appeals Court ruling upheld Judge Carrigan's decision. In today's market, most of the uncommitted SWU buyers are US utilities, who are understandably concerned over the possibility of a restriction on non-US-origin feed delivered to DOE. Should the Appeals Court decision be upheld, the effective price of enriching acceptable feed at DOE would be substantially higher than it is now. US customers would have to bear the cost of adjusting inventories in order to supply the correct origin, or mix of origins, to DOE for enrichment.

For example, production of 3.5 w/o $U_{235}$ at a tails assay of 0.30 w/o requires about 1.8 kgU of natural $UF_6$ per SWU. Assuming a 100-percent restriction on non-US-origin feed and the current Nuexco premium for US-origin $UF_6$ ($6.50 per kgU), the effective cost of DOE SWU to a utility would be $11.70 higher than non-DOE SWU. While there is yet no firm requirement for US-origin feed, in the interim, the uncertainty surrounding DOE's position has acted to depress the price of DOE SWU offered on the secondary market.

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## APPEALS COURT RULES IN US PRODUCERS VS. DOE LAWSUIT

On July 20, 1987, a three-judge panel of the US Court of Appeals for the Tenth Circuit unanimously affirmed US District Court Judge James Carrigan's June 1986 order prohibiting the US Department of Energy (DOE) from enriching any non-US-origin uranium for use in a US reactor (Count I). Count I argued that DOE had violated section 2201(v) of the Atomic Energy Act (as amended in 1964) which required DOE to restrict enrichment of non-US-origin uranium for use in nuclear reactors under US jurisdiction until the viability of the US uranium industry is assured. The Appeals Court also remanded (sent back) to Carrigan's jurisdiction the September 1985 ruling declaring the Utility Services Enrichment Contract (USEC) null and void (Count II). The text of the Appeals Court's decision is reprinted in its entirety beginning on page 7.

Almost immediately after the ruling, DOE filed an emergency motion in the Appeals Court requesting a stay of the decision, pending filing of a petition for *writ of certiorari*, the legal term for requesting that the Supreme Court review the case. If four justices of The Supreme Court voted affirmatively, the Supreme Court would review the case.

Despite the Appeals Court ruling, DOE is still accepting non-US-origin uranium for enrichment and use in US reactors. In doing so, it is arguing that Congress intended DOE to be able to continue enriching non-US-origin uranium until a *final* judgment is rendered by the courts. As a basis for that assertion, DOE cites the bill funding DOE for Fiscal Year 1987, and in particular, language in the Conference Committee Report that describes a final judgment as "a decision by the Court of Appeals '*or the Supreme Court should certiorari be granted.*'"

### Market Implications

Under the 100-percent restriction level ordered by the District Court ruling, and upheld on appeal, US utilities would be unable to enrich non-US-origin uranium in their enrichment contracts with DOE until the viability of the US uranium industry is assured. The extent of an *eventual* restriction level (less than 100 percent) is speculative at present, but some intermedate level of restriction is likely to become effective within the next year.

Because of the ruling, some US utilities may be considering backup enrichment suppliers other than DOE if they are to obtain near-term enrichment of their non-US uranium. It is possible that some utilities may have to choose between cancellation of non-US-origin uranium contracts or cancellation of deliveries under DOE enrichment contracts. It may be easier, or less costly, for some US utilities to claim *force majeure* and terminate some SWU deliveries under their DOE contracts, rather than attempt to break uranium supply contracts. The extent and timing of any such cancellations could depend on several factors, such as utilities' individual inventory situations and perceptions about future restriction levels.

Nevertheless, obtaining alternate enrichment supplies may not be economical. Other SWU suppliers might not be competitive at the moment because of the relative weakness of the dollar, and also because of insufficient capacity to meet a surge of new near-term demand. As a result, some utilities are looking at the relative costs of obtaining enriched product with their low-priced non-US-origin uranium and European enrichment versus US-origin uranium and DOE SWU.

For some utilities, swapping the origin of their non-US uranium may be a viable solution under a 100-percent restriction level, to meet feed deliveries under DOE enrichment contracts. The crucial decision may depend on at what price the US-origin can be obtained, relative to the cost of switching to higher-priced enrichment.

To date, the market reaction to the court ruling and the proposed legislation has been cautious. While some US utilities moved quickly and aggressively to acquire US origin uranium, most have elected to wait for the next steps in the court case, whether a DOE stay, a Supreme Court review or a Supreme Court refusal to hear the case. Some observations include the following:

1. DOE appears to have lost the legal battle on the issue of import restrictions. While a final resolution is likely to be delayed by stays and other legal maneuvers, the outcome points toward a complete victory for the US producers on the issue of DOE enrichment of non-US-origin uranium.
2. Unless it is superseded by new legislation or a DOE rulemaking, a 100-percent prohibition on the use of non-US origin uranium will likely be in place for some period of time.
3. The Domenici legislation, in the form currently being discussed (restricting the uranium content in domestic reactors to a maximum of 37.5 percent non-US-origin from 1988 to 1994, and a maximum of 50 percent from 1995 to 2000), faces many of the same obstacles that it did last year, when it was defeated in committee. While Senate passage is possible, House passage is seen as most unlikely, and even were it to pass the House, the Administration remains opposed and a Presidential veto would be likely if it were passed.
4. Wholesale defections by US utilities from their DOE enrichment contracts (in favor of enrichment elsewhere) because of the non-US-origin feed issue are not likely to take place in view of the limited capability of such enrichers to accommodate new customers. Furthermore, it is clear that any attempts by US utilities to abrogate contracts will be vigorously contested by DOE.
5. A 100-percent limitation probably will not be in effect very long. Even the staunchest supporters of the US producers' view recognize that, in the long term, such an extreme

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position can be maintained only at the risk of drawing a powerful and negative reaction from US utilities, ratepayers and important US trading partners such as Canada and Australia.

6. Since any 100-percent limitation is likely to be of limited duration, US utilities and their non-US suppliers probably will be able to resolve their uranium delivery problems through schedule adjustments and deferrals, as opposed to being forced to breach contracts or going to court.

In view of these perceptions, it is not surprising that US-origin $U_3O_8$ is commanding higher prices. Both the spot and longer-term markets will be affected. The spot market will reflect the effects of procurement by those buyers with actual needs as well as discretionary buyers looking for bargains. In the longer-term market, floor prices could increase as buyers compete for the uncommitted capacity of current US suppliers, as well as newer suppliers that will require higher prices to begin production.

**Background**

The suit was filed in December 1984 by three uranium producers — Western Nuclear, Inc., Energy Fuels Nuclear, Inc., and Uranium Resources, Inc. In September 1985, Judge Carrigan ruled in favor of the producers on Count II of the suit, a decision that DOE immediately appealed. Carrigan subsequently ruled on the remaining four counts in June 1986, deciding in favor of the producers with respect to the all-important Count I. DOE then appealed the decision on Count I, and the Appeals Court consolidated the two appeals, hearing arguments in September, 1986. Counts III, IV, and V, covering the Variable Tails Assay Option (VTAO) surcharge, DOE's potential use of the government stockpile, and enforcement of the principle that the US uranium industry should be maintained in a condition whereby it should be capable of supplying 100 percent of US requirements at any time, respectively, were not appealed. An article describing the background of uranium import limitations in the USA generally, and a detailed history of the producers vs. DOE court case can be found on page 13.

Judge Carrigan's June 1986 ruling on Count I ordered that, pending DOE's completion of a rulemaking, DOE "shall restrict its enrichment of source or special nuclear materials of foreign origin intended for use in a utilization facility within or under the jurisdiction of the United States" until the viability of the domestic uranium industry is assured. The restriction was to be 75 percent domestic origin from the time of the ruling until January 1, 1987, and 100 percent thereafter. Carrigan's ruling also ordered DOE to commence administrative rulemaking proceedings to establish criteria for providing enrichment services that would comply with the mandate of the Atomic Energy Act.

The criteria to be established by DOE would include a determination of the percentage of non-US-origin material that would be consistent with assuring a viable domestic uranium industry. Carrigan has retained jurisdiction over the issue, and pending the outcome of DOE's appeal procedures the matter would revert to his court. DOE would then have to convince Carrigan that any criteria established with respect to the percent of non-US-origin material would accomplish the mandate of the statute. DOE has thus far refused to conduct such a rulemaking.

**The Appeals Court Ruling**

In its ruling, the Appeals Court stated that the language of the statute is unambiguous, and that the mandate is clear that DOE "shall" impose such restrictions as are necessary to assure the viability of the domestic uranium industry. The word "shall" in the statute is mandatory, and contrary to DOE's arguments, the additional words of the statute, "to the extent necessary", do not confer on DOE the discretion to decline to impose restrictions based on a DOE contention that restrictions would not be effective in assuring the domestic uranium industry's viability.

> "The DOE's interpretation strains the plain meaning of section 2201(v). The unambiguous language of the statute requires the DOE to refuse enrichment of foreign uranium 'to the extent necessary to assure' a viable domestic industry. The DOE may determine how much restriction is required to assure viability, but it cannot decide not to impose restrictions when the industry is not viable. It must continue to impose restrictions until the domestic industry becomes viable."

The Court noted that DOE's argument that a 100-percent restriction would be ineffective in helping the industry does not alter the plain meaning of the statute, saying "The DOE's argument that this policy is not wise in the present uranium market should be made to Congress and not to the courts. We can only apply the statute as Congress passed it." Finally, the Court relied to a considerable extent on the legislative history surrounding the enactment of the statute, and as evidenced by contemporaneous statements in Congress, that history supports the conclusions of the Tenth Circuit.

On the issue of the USEC (Count II), the Tenth Circuit sent the matter back to Judge Carrigan's court to resolve the question of whether the producers had "standing"; that is, the right to pursue their claims with respect to the USEC. (A party generally has standing if that party can show injury and if the Court can redress that injury by its action.) DOE did not raise the issue of standing at the District Court level, but only upon appeal. The Court of Appeals, however, said that it is required to raise the issue whether or not either party does so. The central issue is whether the adoption of the USEC by DOE caused a decline in demand for domestic uranium. If it did so, the producers were injured, thereby meeting the test for "standing." But the Court apparently was not convinced

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that the record reflected sufficient causal connection between the USEC and a decreased demand for domestic uranium so as to say that the producers were injured, and thus has remanded that question to Judge Carrigan's court for further findings. Until the issue of standing is resolved, the Appeals Court will refrain from issuing any opinion on the merits of the producers' challenge to the USEC.

**Legal Options for DOE and the Producers**

After the decision, DOE's main options for continuing to fight the suit included:

1. Petitioning the Appeals Court for a rehearing. Such a petition is intended to set forth points of law or fact that the Court allegedly overlooked or misinterpreted.

2. Filing a motion with the Appeals Court to stay the decision;

3. Petitioning the Supreme Court to review the case on *certiorari*, a necessary preliminary to having the case accepted by the Supreme Court.

Instead of petitioning the Appeals Court for a rehearing, which many observers believed would not be well received by the Court, the Justice Department representing DOE filed an emergency motion in that court, on July 23, to stay the decision pending the filing of a petition for writ of certiorari. If the Court grants the stay (as of press time no action had been taken by the Court), it will be in effect for thirty days, and can be extended beyond that time period at the Appeals Court's discretion. It is highly likely that it will be extended if DOE does file a petition for writ of certiorari. If the Court refuses to stay the decision, the ruling requiring DOE to restrict its enrichment of non-US-origin uranium will go into effect unless DOE seeks a stay from the Supreme Court by way of an application for stay made to Justice Byron White.

In its motion for a stay, DOE set forth arguments as to why the motion should be granted. The arguments were similar to those originally advanced in opposition to Count I, and include:

1. US utilities would be harmed should the court-imposed restrictions be required to go into effect. DOE contends that "the immediate shock of the order in this case falls on utilities that use nuclear fuel." Because many utilities rely on DOE contracts, chiefly the USEC, those utilities may find themselves with "incompatible commitments" for enrichment of their non-US-origin material. DOE estimates that at least $780 million worth of non-US-origin uranium is already contracted for delivery between 1985 and 1990. DOE further stresses that all of the available options — abandoning DOE enrichment contracts for other sources of enrichment of non-US-uranium, or maintaining DOE contracts and buying all US-origin uranium — "will necessarily result in most utilities winding up with duplicative, overlapping, or conflicting contracts for uranium supplies or enrichment services or both."

2. DOE's enrichment business would suffer harm. DOE "faces the prospect of losing hundreds of millions of dollars in enrichment sales, as well as the possibility of being held liable to the utilities for their losses." If utility allegations of breach of contract against DOE are sustained, the utilities might be able to terminate their enrichment contracts with DOE without cost to themselves. According to DOE estimates, up to $500 million in enrichment contracts could be lost in 1988 alone. The main thrust of DOE's argument, however, concerns the impact the ruling could have on DOE's future as an enrichment supplier. Having abandoned DOE for foreign enrichment, there would be considerable incentive to continue using those sources of enrichment services in the future. DOE's motion to stay the decision states that "no court of law will be able to put back together the contracts and commitments that the order in this case has jeopardized."

3. The impact of the ruling on US foreign relations would be harmful, particularly with Canada and Australia. The motion notes that the Department of State and the office of the US Trade Representative had submitted declarations in the case, saying that the District Court order would have "grave consequences" for US trade and diplomatic relations with other countries. Both Canada and Australia had previously sent to the State Department formal notes expressing their countries' concern over the impact of the court order, and both have reiterated their concerns since the Appeals Court decision. They have mentioned that, in their view, an embargo on uranium for the domestic US market puts the USA in breach of its obligations under the General Agreement on Trade and Tariffs (GATT), and as such, the USA could be subject to retaliatory actions and may owe compensation.

Canada's note to the State Department stated that the Court's decision "will severely disrupt Canadian exports..., will upset the broader international market for uranium and will give rise to major trade irritants between the United States and its current suppliers of uranium."

Australia's communique similarly stated that the order "will disrupt the world market for uranium, erode international confidence in the reliability and predictibility of United States policies affecting international cooperation in the peaceful uses of nuclear energy, and give rise to a major problem in trade relations between our countries in that it will impact adversely and unfairly on Australia's exports of uranium to the U.S."

The DOE motion also calls attention to the potential effect on US non-proliferation policy, saying the the USA's ability to be a "consistent, reliable partner" in international nuclear cooperation is a vital element in US foreign relations. In addition, DOE's position as an enrichment supplier is a key link in maintaining US legal controls over uranium, in order to protect against nuclear proliferation. The order "directly

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'impedes' our ability to control the world-wide spread of nuclear materials."

4. According to DOE, a stay would not cause further harm to the US production industry. DOE's motion for stay says "because any prospect for recreating a viable domestic uranium industry depends on there being a viable nuclear power industry to consume the producers' product, as well as a viable enrichment services provider in the United States to make that product into a usable nuclear fuel, the ultimate interests of miners and millers will, in fact, be undercut by the order in this case."

In its consideration of whether to grant a stay of its decision, the Tenth Circuit Court of Appeals must consider several points:

1. Whether at least four Supreme Court Justices would vote for granting the *writ of certiorari*;

2. the balance of equities, i.e., the respective harm to the parties involved in the suit, the public, etc. in granting or denying the stay; and

3. the likelihood of DOE prevailing in the Supreme Court on the merits of its case.

Essentially, the Circuit Court must consider whether it thinks the case is important enough for the Supreme Court to review. DOE argues that the Court has already acknowledged this to be the case, by the Court having stated in its decision that "This case raises important issues, the resolution of which will affect not only the parties involved in this suit but also all utilities that use nuclear power as well as the eventual consumers who purchase power from such utilities." However, the issues raised are seldom viewed as important constitutional issues with attending social and political implications, which are the types of issues most often considered by the Supreme Court.

If, as many observers expect, the Appeals Court grants the stay, allowing DOE time to file its writ with the Supreme Court, the mandatory restrictions on DOE enrichment probably will not go into effect for some time. The Supreme Court will not review DOE's petition for writ of certiorari before October 1987, when it reconvenes. Thereafter the review process could take several months to a year as the case proceeds through the review process.

**Congressional Actions**

Although the courts have been the arena for this first phase in the producers' efforts to maintain a viable industry, the real decisionmaking must take place in Congress, as the Appeals Court noted. Since well before the producers' lawsuit was filed, Senator Pete Domenici (R, New Mexico) has been in the forefront of several unsuccessful attempts to enact legislative assistance for the US producers.

A draft of Domenici's recent bill in the Senate would require US nuclear utilities to use fuel with no less that 62.5 percent US-origin uranium content, between 1988 and 1994, and no less than 50 percent from 1995 to 2000. Penalties for non-compliance would be imposed on a sliding-scale basis for those utilities that load less than 62.5 percent US-origin fuel in their reactors. Domenici's proposal has some support from both the US producers and US utilities, and may be part of a larger bill covering enrichment and other uranium-related issues. The section of the bill dealing with import restrictions could, however, ultimately be part of a bill sponsored by Senator Wendell Ford (D, Kentucky) dealing with the conversion of DOE's enrichment enterprise to a government-owned corporation.

A more remote option concerns the possibility of amending or deleting section 161(v) of the Atomic Energy Act. The Domenici legislation would accomplish this. Such an action would render moot the basis of the producers' lawsuit.

**Conclusion**

Until the judicial, legislative and administrative avenues have run their course, the exact *eventual* degree of restriction on enrichment of non-US-origin uranium for use in reactors in the USA will not be known. It is virtually certain that some partial restriction will ultimately be enacted and enforced.

At present, DOE has petitioned the Appeals Court for a stay of its decision so that DOE (through the Solicitor General) can petition the Supreme Court for a review of the case. After a review, the Supreme Court may accept or decline to hear the case. An eventual decision by the Supreme Court, should the case go that far, could take until some time in 1988 at a minimum. Legislative solutions, such as the one proposed by Senator Domenici, are also highly uncertain. It will be difficult to balance the several opposing interests, such as those of the uranium producers, the electric utilities, and the administration, in a bill that can be passed by Congress. The court-ordered DOE rulemaking, which DOE has not yet started, also could establish a level of import restriction that might be acceptable to the affected parties.

US utilities must consider how to plan both for a possible immediate 100-percent restriction level, the duration of which is unknown, and for a likely, but also uncertain, less-than 100-percent restriction at some future date. In such a planning, several alternatives are possible, ranging from abrogating existing DOE contracts and looking for overseas enrichment to maintaining DOE enrichment and possibly buying additional US-origin uranium to comply with some yet-unknown US-origin requirement.

Restrictions on imports of uranium into the USA also will affect both US and non-US uranium producers. Both must weigh the potential impact of several possible restricted market scenarios on their pricing strategies, production plans, and contract obligations. Until these uncertainties are reduced, uranium producers and utilities will continue to find it difficult to make firm plans for the future.

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**UNITED STATES COURT OF APPEALS**
**FOR THE TENTH CIRCUIT**

Nos. 85-2428

86-1942

WESTERN NUCLEAR, INC., ET AL.,

Plaintiffs,

v.

F. CLARK HUFFMAN, ET AL.,

Defendants- Appellants.

**APPEAL FROM THE UNITED STATES DISTRICT COURT**
**FOR THE DISTRICT OF COLORADO**
**(D.C. No. 84-C-2315)**

Before McKAY, McWILLIAMS AND BALDOCK, Circuit Judges.

McKAY, Circuit Judge.

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Plaintiffs, three uranium mining and milling companies, filed a five-count complaint challenging various Department of Energy (DOE) policies. Shortly after filing the complaint, plaintiffs moved for summary judgment on count two, which challenged the DOE's use of the recently adopted uranium enrichment services contract (UESC). The district court granted plaintiffs' motion, and the DOE appealed. While that appeal was pending, the district court also granted plaintiffs' summary judgment motion on count four (Editor's note: this was actually count one), which alleged that the DOE was statutorily required to restrict enrichment of foreign uranium. The DOE appealed that decision, and we consolidated the two appeals.

This case raises important issues, the resolution of which will affect not only the parties involved in this suit but also all utilities that use nuclear power as well as the eventual consumers who purchase power from such utilities. A brief exposition of the nuclear industry and its history is helpful in understanding these important issues and their ramifications.

**I. Background**

Private-entity involvement in the nuclear industry evolved gradually. In its infancy, the Government had a complete monopoly over the nuclear industry. It owned all uranium, all nuclear fuel, and all nuclear production and utilization facilities. Initially, the Atomic Energy Commission (AEC), the DOE's predecessor, controlled these operations. The AEC did permit private entities to mine uranium ore, but these entities could only sell to the Government. In 1954, Congress enacted legislation that permitted private ownership of nuclear reactors as well as private possession and use, but not ownership, of nuclear fuel. The AEC issued licenses permitting use of nuclear fuel and monitored entities that owned reactors and used nuclear fuel. However, private entities that mined uranium ore continued to have only one customer — the Federal Government. Finally, in 1964, Congress passed legislation permitting private ownership of nuclear fuel and allowing uranium mining and milling companies to sell to private entities.

Notwithstanding this shift to the private sector, the Government continued to play an important role in the nuclear fuel cycle. The natural uranium mined could not be used directly as nuclear fuel by the private entities that bought it. Natural uranium consists of less than one percent U-235, and nuclear fuel must contain approximately three percent U-235. Thus, to be used as nuclear fuel, uranium must have a higher concentration of U-235 than is found in nature. The process that produces this high concentration is called "enrichment," and, in 1964, the AEC was the only entity in the world with enrichment facilities. Consequently, private entities could not use natural uranium unless the AEC first enriched it to the level required for use as nuclear fuel. Congress recognized this and, when it privatized the ownership of nuclear fuel, permitted the AEC to contract with private entities for the provision of enrichment services. In order to protect the economic strength of the domestic uranium industry, Congress also restricted enrichment of foreign uranium when the resulting nuclear fuel was designated for use in domestic facilities. Initially, the AEC was not permitted to enrich any foreign uranium for domestic use. As demand for nuclear fuel increased, however, the restrictions were phased out, and the AEC, later the DOE, eventually provided enrichment services for both domestic and foreign uranium.

Increases in demand for nuclear fuel also encouraged foreign entities to build enrichment facilities. This increased the competition for enrichment and permitted some of the DOE's domestic and foreign customers to obtain enrichment services outside the United States. As long as demand for nuclear fuel continued to increase, neither the DOE nor the domestic mining and milling companies were overly concerned with foreign competition. Rather, they were operating at capacity and were not threatened by the foreign competition.

The boom, however, was followed by a bust. Private entities that expected uranium demand to exceed supply had entered long-term contracts for uranium and for enrichment services. The quantities were based on forecasts of nuclear fuel needs in all present and future facilities. Unfortunately, many nuclear facilities were not completed on schedule, or were never completed, and private entities were left with huge stockpiles of nuclear fuel and no place to use it. Some sold nuclear fuel to other entities and, as their contracts expired, stopped purchasing both uranium and nuclear fuel. Others, however, began to purchase higher quality uranium at lower costs from now fully operational foreign mines.

The DOE also faced increased foreign competition in the enrichment field. It responded by offering enrichment services on new and different terms. Restrictions on enrichment of foreign uranium had long since been discontinued, but the DOE

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now offered a variable-tails option in order to attract customers away from the foreign competition. Tails are the depleted uranium left over after the enrichment process is completed. A DOE customer could select a low tails assay — a low concentration of U-235 in the tails — and decrease the uranium required in the enrichment process. In other words, by increasing the enrichment used on a particular quantity of uranium, the DOE was able to increase the amount of enriched uranium produced from a given quantity of natural uranium. By offering the variable-tails option, the DOE permitted its customers to use more uranium and less enrichment services or less uranium and more enrichment services.

These DOE policies with respect to enriching foreign uranium and offering a variable-tails option increased the perceived economic threat to domestic uranium mining and milling companies. They faced increased use of foreign uranium as well as decreased use of uranium in general because of the new variable-tails option. Plaintiffs and other mining and milling companies responded by requesting that the DOE implement restrictions on enrichment of foreign uranium as required by 42 U.S.C. section 2201(v) (1982), which provides that the DOE, "to the extent necessary to assure the maintenance of a viable domestic uranium industry shall not offer (enrichment) services for source or special nuclear materials of foreign origin intended for use in a utilization facility within or under the jurisdiction of the United States." The DOE initially refused, claiming that the domestic mining and milling industry was viable, and, thus, section 2201(v) did not require any restrictions. In 1984 and again in 1985, however, the DOE expressly found that the domestic uranium industry was not viable. Even so, it still refused to impose restrictions, now claiming that even if restrictions were imposed the domestic industry would not become viable.

Meanwhile, the DOE was grappling with economic problems of its own. It had become the high cost provider of enrichment services and had lost many of its customers to foreign enrichers. In an attempt to recapture part of the market, the DOE adopted the UESC. This standard form contract provided lower prices, encouraged use of foreign source uranium, and permitted a variable-tails option. Prior to using the UESC, the DOE did not implement any rulemaking procedures pursuant to the Administrative Procedure Act or submit the contract to Congress.

Plaintiffs, already threatened by the precarious economic state of the uranium industry, felt further threatened by the UESC and thereafter filed their complaint in this matter.

**II. Challenge to Uranium Enrichment Services Contract**

In count two of their complaint, plaintiffs challenged the DOE's adoption of the UESC. The claim was based on both substantive and procedural grounds, but the district court reached only the latter in concluding that the adoption of the UESC was procedurally defective. It stated:

> I conclude that the new (UESC) amounts to a change in the "criteria" under which enrichment services are to be performed. Because the contract was not submitted to Congress, it is null and void.
>
> Accordingly, it is ordered that the plaintiffs' motion for partial summary judgment as to Count II is granted.
> Amended Order, record, vol. 2, doc. 15, at 4.

The DOE now challenges the decision on count two, claiming that: (1) plaintiffs' claim is moot; (2) plaintiffs' lack standing; and (3) the district court was erroneous on the merits.

**A. Mootness**

Mootness goes to the jurisdiction of a federal court. To satisfy the "case or controversy" limitation of Article III, "[t]he actual controversy between the parties 'must exist at stages of appellate or certiorari review, and not simply at the date the action is initiated.'" *Wiley*, 612 F.2d at 475 (quoting *Roe v. Wade*, 410 U.S. 113, 125 [1973]). "Simply stated, a case is moot when the issues presented are no longer 'live' or the parties lack a legally cognizable interest in the outcome." *Powell v. McCormack*, 395 U.S. 486, 496 (1969). *County of Los Angeles v. Davis*, 440 U.S. 625, 631 (1979) (quoting *United States v. W.T. Grant Co.*, 345 U.S. 629, 632-33 (1953)), and can be satisfied only if two conditions are shown:

(1) it can be said with assurance that "there is no reasonable expectation ..." that the alleged violation will recur, see [*W.T. Grant*, 345 U.S.] at 633; see also *SEC v. Medical Committee For Human Rights*, 404 U.S. 403 (1972), and

(2) interim relief or events have completely and irrevocably eradicated the effects of the alleged violation. See, *e.g.*, *DeFunis v. Odegaard*, 416 U.S. 312 (1974); *Indiana Employment Security Div. v. Burney*, 409 U.S. 540 (1973).
*Davis*, 440 U.S. at 631.

We need only reach the second condition. The DOE asserts that plaintiffs' sole challenge to the UESC was that its implementation was procedurally defective. Indeed, the grounds for the district court's granting of plaintiffs' summary judgment motion was that "the [UESC] amounts to a change in the 'criteria' under which enrichment services are to be performed [and it] was not submitted to Congress." *Western Nuclear, Inc. v. Huffman*, No. 84-C-2315, slip op. at 4 (D. Colo. Sept. 19, 1985). Since the district court's decision in this case, the DOE has submitted the UESC to rulemaking procedures. DOE, therefore, argues that plaintiffs' appeal is moot.

We need not determine whether subsequent DOE and congressional activity cured any alleged procedural defects in this case and thus mooted plaintiffs' claim. Their challenge was not based only on procedural grounds; it included substantive grounds as well, and plaintiffs' substantive challenge to the UESC remains viable. The DOE admits that the criteria adopted through the subsequent rulemaking procedures are the same as those embodied in the UESC. Consequently, if substantive deficiencies existed before the DOE rulemaking process, they still exist.

Because we conclude that the DOE has not shown that plaintiffs' claim has been eradicated by subsequent rulemaking, we need not reach the issue of whether the violations can recur. The DOE has filed to show that plaintiffs' claim is moot.

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**B. Standing**

Even though the DOE did not challenge plaintiffs' standing in the district court, we must address that issue before we can reach the merits of this case.

> Federal courts are not courts of general jurisdiction; they have only the power that is authorized by Article III of the Constitution and the statutes enacted by Congress pursuant thereto. *See, e.g., Marbury v. Madison*, 1 Cranch (5 U.S.) 137, 173-180, 2 L.Ed. 60 (1803). For that reason, every federal appellate court has a special obligation to "satisfy itself not only of its own jurisdiction, but also that of the lower courts in a cause under review," even though the parties are prepared to concede it. *Mitchell v. Maurer*, 293 U.S. 237, 244, 55 S. Ct. 162, 165, 79 L.Ed. 338 (1934).

*Bender v. Williamsport Area School Dist.*, 106 S. Ct. 1326, 1331 (1986). One jurisdictional requirement is that of standing.

Standing focuses on whether a particular plaintiff has the right to pursue a cause of action. "[L]ike mootness and ripeness, [it] 'has its constitutional origins in the "case or controversy" limitation of Article III which insures that courts exercise their power only in cases where true adversary context allows informed judicial resolution.'" *Citizens Concerned for Separation of Church & State v. City of Denver*, 628 F.2d 1289, 1294 (10th Cir. 1980) (quoting *Wiley v. National Collegiate Athletic Ass'n*, 612 F.2d 473, 475 (10th Cir. 1979), *cert. denied*, 446 U.S. 943 (1980)), *cert. denied*, 452, U.S. 963 (1981). While the courts have not always been clear as to which standing requirements are based on the Constitution and which are based on prudential concerns of the courts, they have established that:

> at an irreducible minimum, Art. III requires the party who invokes the court's authority to "show that he personally has suffered some actual or threatened injury as a result of the putatively illegal conduct of the defendant," *Gladstone, Realtors v. Village of Bellwood*, 441 U.S. 91, 99 (1979), and that the injury "fairly can be traced to the challenged action" and "is likely to be redressed by a favorable decision," *Simon v. Eastern Kentucky Welfare Rights Org.*, 426 U.S. 26, 38, 41 (1976).

*Valley Forge Christian College v. Americans United for Separation of Church & State, Inc.*, 454 U.S. 464, 472 (1982). Consequently, to establish standing plaintiffs must show[1] that the DOE's adoption of the UESC has injured them and that the court can redress that injury by invalidating the UESC.

Plaintiffs claim they have met this burden because the DOE, by filing its cross-motion for summary judgment without challenging standing, implicitly acknowledged plaintiffs' standing. However, "[p]arties may not by stipulation invoke judicial power of the United States in litigation which does not present an actual case or controversy, and jurisdictional questions are of primary consideration and can be raised at any time by courts on their own motion." *City of Denver*, 628 F.2d at 1296-97 (citations omitted). Thus, the DOE cannot consent to plaintiffs' standing. In fact, even if no party challenged standing, we are required to raise the issue.

At the summary judgment stage, plaintiffs are entitled to prevail only if the record shows "that there is no genuine issue as to any material fact and that [plaintiffs are] entitled to a judgment as a matter of law." Fed. R. Civ. P. 56(c). When the standing issue is not raised in the district court, review on appeal may reveal factual disputes. *See, e.g., Steele v. National Firearms Act Branch*, 755 F.2d 1410, 1414 (11th Cir. 1985)

The factual dispute with respect to standing in this case revolves around the causation element of standing. The parties agree that plaintiffs have been harmed by the decline in demand for domestic uranium; however, they disagree on whether the adoption of the UESC has any nexus to that decline. An affidavit filed by plaintiffs in support of their motion for summary judgment states in relevant part:

> DOE policies with respect to the provision of enrichment services can have and do have a significant impact on demand for uranium and, consequently, the viability of the domestic uranium industry. For example, independent consultants (*e.g.*, Nuexco and Nuclear Resources International) indicate that DOE's new [UESC] may diminish demand for uranium by as much as 100,000,000 pounds or more over the next five to ten years. This approximates or exceeds expected production for the period.

Plaintiff's Memorandum in Support of Motion for Summary Judgment on Count II, record, vol. 1, doc. 3, Exhibit B (affidavit of Larry A. Boggs), at paragraph 2. To support the causal link, and thus standing, between the adoption of the UESC and the decrease in demand for domestic uranium, plaintiffs argue on appeal that the UESC: (1) fails to restrict enrichment of foreign uranium; (2) permits enrichment customers to select a variable-tail assay that increases the use of enrichment services and decreases the use of uranium; and (3) contains pricing provisions that decrease demand for domestic uranium. If the UESC is invalidated, plaintiffs argue, these policies will be reversed and the demand for domestic uranium will consequently increase. However, since standing was not challenged in the district court, the record fails to explain how the UESC would decrease demand for domestic uranium and thereby cause plaintiffs harm. Plaintiffs' claim that we may look beyond the record to the circumstances surrounding the case is inaccurate. The Supreme Court has specifically stated that "[t]he existence of a justifiable 'case' or 'controversy' under Art. III must affirmatively appear in the record." *Bender*, 106 S. Ct. at 1334.

Notwithstanding DOE's failure to challenge plaintiffs' standing at the trial level, it did specifically refute plaintiffs' claim that the UESC harmed them because it decreased demand for domestic uranium. The DOE claimed in that forum that the UESC did not amend existing DOE policy and, thus, could not change the demand for domestic uranium. On this appeal, the DOE renews this contention by arguing that even though the demand for domestic uranium has declined and will likely continue to

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[1]Plaintiffs bear the burden of proving standing. This "burden is not insurmountable; they need only demonstrate a 'substantial likelihood' that the causal link exists," *Munoz-Mendoza v. Pierce*, 711 F.2d 421 (1st Cir. 1983), and "that the relief requested will redress the injury." *Duke Power Co. v. Carolina Envtl. Study Group, Inc.*, 438 U.S. 59, 75 n.20 (1978).

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decline, the adoption of the UESC did not affect that demand and, consequently, plaintiffs do not have standing to challenge the UESC. It maintains that the policies behind the UESC existed prior to its adoption and would continue to exist even if the UESC were declared null and void.

Plaintiffs conceded in their complaint that the DOE did not restrict enrichment of foreign uranium and allowed customers to select a variable-tail assay before the adoption of the UESC. *See* Complaint, record, vol. 1, doc. 1 at 9, 17, 18. An injury that "occurred before, existed at the time of, and continued unchanged after the challenged" action cannot support a standing claim. *California Ass'n of the Physically Handicapped, Inc. v. FCC*, 778 F.2d 823 (D.C. Cir. 1985). Policies ostensibly harming plaintiffs that existed prior to the adoption of the UESC are insufficient to vest plaintiffs with standing to challenge the legality of the UESC. However, the record in this case is unclear as to whether adoption of the UESC did in fact effect a change in DOE policies regarding enrichment of foreign uranium and availability of variable-tail assays. The UESC may have implemented more lenient policies that exacerbated the economic harm already experienced by plaintiffs. This unresolved factual dispute surrounding the causation component of the standing inquiry may not be resolved on appeal.

Plaintiffs argue alternatively that UESC pricing of DOE enrichment services may decrease demand for domestic uranium, thus harming them and supporting standing to challenge the UESC. Plaintiffs cannot argue that lower enrichment prices decrease domestic uranium sales. If the DOE has higher prices, DOE customers are encouraged to seek enrichment services from DOE's foreign competitors. Both parties agree that entities who use foreign enrichers also tend to purchase foreign uranium. Consequently, a decrease in DOE enrichment prices should encourage domestic enrichment and, concomitantly, domestic uranium purchases. On the other hand, plaintiffs may be arguing that new pricing techniques favor foreign uranium over domestic uranium and, thus, decrease demand for domestic uranium. We find this doubtful because section 2201(v) specifically mandates that pricing of enrichment services be nondiscriminatory. Nonetheless, plaintiffs should be permitted to present whatever factual support they have for this argument on remand.

Because of the unresolved factual dispute surrounding the causation component of the standing inquiry, we cannot conclude that plaintiffs have satisfied their burden on appeal of establishing standing. However, because the DOE failed to contest standing in the district court, plaintiffs should be allowed to present evidence supporting their standing allegations. "Factual issues concerning the existence of the standing requirements in a particular case are to be resolved in the same manner as any other controverted fact." *Steele*, 755 F.2d at 1414. Thus, we remand for resolution of the factual dispute which will be determinative of plaintiffs' standing to challenge the UESC.

**C. Merits**

Because the issue of standing on this claim remains unresolved, any opinion on the merits of this case would be an advisory opinion. "[F]ederal courts established pursuant to Article III of the Constitution do not render advisory opinions." *United Pub. Workers of Am. v. Mitchell*, 330 U.S. 75, 89 (1947). Thus, we cannot reach the merits of plaintiffs' challenge to the UESC.

**III. Restrictions on Enrichment of Foreign Uranium**

Count four of plaintiffs' complaint alleges that the DOE violated 42 U.S.C. section 2201 (v) (1982) when it refused to restrict enrichment of foreign uranium despite a determination that the domestic uranium industry was not viable. The DOE argues that restrictions are only required if they would make the domestic uranium industry viable and that restrictions at this time would not result in a viable industry. The district court interpreted section 2201 (v) to require the DOE to restrict enrichment of foreign uranium whenever the domestic industry is not viable — whether or not such restriction would result in successful resuscitation of the uranium industry. The DOE appealed and moved to stay enforcement of the district court order until the appeal was finally decided. We granted the motion to stay and expedited the appeal.

This case is one of statutory interpretation. The parties agree that the domestic uranium industry is not viable and agree that the DOE's actions are controlled by section 2201 (v). However, they disagree on the meaning of that statute. Even under current law, which requires great deference to agency interpretation of statutes, the Supreme Court has recognized that:

> [t]he judiciary is the final authority on issues of statutory construction and must reject administrative constructions which are contrary to clear congressional intent. If a court, employing traditional tools of statutory construction, ascertains that Congress had an intention on the precise question at issue, that intention is the law and must be given effect.

*Chevron U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837, 843 n.9 (1984) (citations omitted). Under this authority, the district court decided that, unless the DOE determines that something other than restrictions will assure the viability of the domestic uranium industry, section 2201(v) requires restrictions on enrichment of foreign uranium whenever the domestic industry is not viable. Since this is a statutory interpretation question, we review that decision *de novo*. *See Supre v. Ricketts*, 792 F.2d 958, 961 (10th Cir. 1986); *City of Edmonds v. United States Dep't of Labor*, 749 F.2d 1419, 1421 n.2 (9th Cir. 1984).

The courts have long recognized that "the starting point for interpreting a statute is the language of the statute itself." *Consumer Prod. Safety Comm'n v. GTE Sylvania, Inc.*, 447 U.S. 102, 108 (1980); *see also Rubin v. United States*, 449 U.S. 424, 429 (1981). "When we find the terms of a statute unambiguous, judicial inquiry is complete, except 'in "rare and exceptional circumstances."'" *Id.* at 430 (quoting *TVA v. Hill*, 437 U.S. 153, 187 n.33 (1978) (quoting *Crooks v. Harrelson*, 282 U.S. 55, 60 (1930)) Even when an agency interpretation is normally entitled to deference, "[i]f the intent of Congress is

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clear, that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress." *Chevron U.S.A.*, 476 U.S. at 842-43. Thus, we look first to the language of the statute, and if it is unambiguous, we look to the legislative history only to determine if exceptional circumstances dictate an interpretation contrary to the language of the statute.

As noted, the relevant portion of the statute provides that "*to the extent necessary to assure the maintenance of a viable domestic uranium industry, [the DOE] shall not offer*" enrichment services for foreign-source uranium designated for use in the United States. 42 U.S.C. section 2201(v) (emphasis added). The DOE relies on *Young v. Community Nutrition Institute*, 106 S. Ct. 2360 (1986), in arguing that the phrase "to the extent necessary" gives it discretion to determine whether to restrict enrichment of foreign uranium. The Supreme Court in *Young* was interpreting 21 U.S.C. section 346 (1982), which states:

> Any poisonous or deleterious substance added to any food, except where such substance is required in the production thereof or cannot be avoided by good purposes of the application of clause (2) (A) of section 342(a) of this title; but when such substance is so required or cannot be avoided, the Secretary shall promulgate regulations limiting the quantity therein or thereon *to such extent as he find necessary for the protecting of public health*, and any quantity exceeding the limits so fixed shall also be deemed to be unsafe for purposes of the application of clause (2) (A) of section 342(a) of this title. (Emphasis added.)

The FDA's longstanding interpretation was that the phrase "to such extent as he finds necessary for the protection of public health" modified the word "shall". Thus, the FDA was of the opinion that it was to determine when regulation was necessary to protect public health. Having determined that regulating aflatoxin (a poisonous substance present in some foods) was not necessary to protect the public health, the FDA did not promulgate regulations. The Supreme Court decided that it was unclear whether the critical phrase modified "shall" or "the quantity therein or thereon. " As a result, the Supreme Court concluded that the courts should adopt the agency interpretation of the statute as a reasonable one. The critical point in the analysis was that the "FDA [had] advanced an interpretation of an ambiguous statutory provision." *Young*, 106 S. Ct. 2365. Once that point was reached, the Court was required to defer to the reasonable interpretation of the agency.

The case before us presents a different situation. Congress, in enacting section 2201(v), used unambiguous language. It stated "the [DOE] . . . shall not offer" the enrichment of foreign uranium. The use of "shall" is usually mandatory language and will require action unless a convincing argument to the contrary can be made. *See City of Edmonds*, 749 F.2d at 1421; *American Fed'n of Gov't Employees v. Federal Labor Relations Auth.*, 739 F.2d 87, 89 (2d Cir. 1984); *Manatee County v. Train*, 583 F.2d 179, 182 (5th Cir. 1978); *Association of Am. R.R. v. Costle*, 562 F.2d 1310, 1312 (D.C. Cir. 1977). Thus, section 2201(v) requires that the DOE not offer enrichment of foreign uranium.

This requirement is, of course, subject to the modifying phrase "to the extent necessary to assure the maintenance of a viable domestic uranium industry." That phrase, however, is also unambiguous. It informs the DOE of the *amount* of restriction required, it does not provide a scenario in which the DOE is excused from restricting foreign enrichment notwithstanding a nonviable domestic industry. It instructs that when domestic nonviability is determined, restrictions on enrichment of foreign-source uranium must be imposed and must become increasingly aggressive, to the point of 100% restriction, until the domestic industry is rejuvenated and becomes viable. If a less-than-100% restriction can assure viability, only that lesser level of restriction is required. The statute does not provide that increasingly stiffer restriction are required only to the point that DOE determines that such restrictions will not resuscitate the industry. Under its interpretation of the statue, the DOE has no discretion until that time, but once such a determination is made, it may lift *all* restrictions — at the precise point in time when the domestic industry is at its lowest ebb.

Furthermore, the nature of the modifying phrase here differs from *Young*. In *Young*, the FDA specifically argued that regulations were not required to protect the public health; rather, tolerance levels established by the FDA accomplished that goal. The FDA credibly argued that it could serve the statutory purpose — the protection of the public health — without publishing regulations for aflatoxin. In this case, the DOE cannot accomplish its statutory purpose — the maintenance of a viable domestic uranium industry — without imposing restrictions on enrichment of foreign uranium. Rather the DOE proposes to abandon the statutory goal. The DOE does not argue that the domestic industry is viable without restrictions; it claims that it has discretion to determine whether to implement restrictions when restriction will not assure the viability of the domestic industry. The DOE's interpretation strains the plain meaning of section 2201(v). The unambiguous language of the statute requires the DOE to refuse enrichment of foreign uranium "to the extent necessary to assure" a viable domestic industry. The DOE may determine how much restriction is required to assure viability, but it cannot decide not to impose restrictions when the industry is not viable. It must continue to increase restrictions until the domestic industry becomes viable. The DOE's argument that this policy is not wise in the present uranium market should be made to Congress and not to the courts. We can only apply the statute as Congress passed it.

Finally, this is not a "rare and exceptional" case in which the language of the statute must give way to clear congressional intent. In hearings prior to the enactment of section 2201(v), consistent concern was expressed over the effects of imports on the domestic uranium industry. *See, e.g., Private Ownership of Special Nuclear Materials: Hearing Before the Subcomm. on Legislation of the Joint Comm. on Atomic Energy*, 88th Cong., 1st Sess. 114-15 (1963) (Statement of Richard D. Bokum II, President, United Nuclear Corp.); *id.* at 145 (statement of Andrew J. Biemiller, Director, Department of Legislation, AFL-CIO); *Private Ownership of Special Nuclear Materials, 1964: Hearings Before the Subcomm. on Legislation of the Joint*

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*Comm. on Atomic Energy*, 88th Cong., 2d Sess. 154 (1964) (statement of Dean A. McGee, President, Kerr-McGee Oil Industries). In its report to Congress, the Joint Committee first recognized the importance of a viable domestic uranium industry:

> The maintenance of a viable domestic uranium mining and milling industry is an essential part of a sound nuclear industry and is also vital to the long-range defense and security interests of the United States. The bill accompanying this report, by providing for uranium enrichment services, is a desirable step in this direction.

S. Rep. No. 1325, 88th Cong., 2d Sess., *reprinted in* 1964 U.S. Code Cong. & Admin. News 3105, 3115. The committee then explained the basis for requiring restrictions.

> [I]mportation could have a serious impact on the uranium mining and milling industry, particularly during a period of limited demand for its product. Accordingly, the flexible restriction contained in the committee bill will allow the [DOE] to review periodically the condition of the domestic and world uranium markets and to offer enrichment services on a basis which will assure, in its opinion, the maintenance of a viable domestic uranium mining and milling industry.
>
> ...[T]he committee...has concluded that it would be reasonable to place restrictions upon the performance of services by the [DOE] where the enrichment of foreign material would have an adverse effect on the domestic uranium industry. It is the committee's view that the measures taken in this bill to assure the viability of the domestic uranium industry are in the national interest since this industry is closely related to our vital defense and security interests.

*Id., reprinted in*, 1964 U.S. Code Cong. & Admin. News at 3120-21. At no point in the legislative history is there any indication that Congress would permit the DOE to abandon attempts to maintain a healthy domestic industry. On the contrary, Congress considered a viable domestic industry to be vitally important to United States' defense and security interests and did not want the United States to become dependent on foreign sources of uranium. We conclude that the legislative history supports our determination that if the domestic uranium industry is not viable, the DOE must restrict enrichment of foreign uranium. Thus, we affirm the district court's decision granting plaintiffs' summary judgment motion on count four.

**III. Conclusion**

Plaintiffs' challenge to the UESC is remanded to the district court. The record does not clearly demonstrate that plaintiffs have standing. However, the DOE did not challenge standing in the district court, and plaintiffs should be given an opportunity to prove their standing allegations.

Plaintiffs' claim that section 2201(v) unambiguously requires the DOE to implement restrictions on enrichment of foreign uranium when the domestic uranium industry is not viable is correct. The DOE has not implemented such restrictions and, thus, the district court's decision granting plaintiffs injunctive relief was appropriate and should be affirmed.

The case is affirmed in part and remanded in part, with instructions to proceed in a manner consistent with this opinion. The stay of the district court's injunction heretofore entered is dissolved.

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## HISTORY OF THE URANIUM PRODUCERS VS. DOE LAWSUIT

### Introduction

On July 20, 1987, The US Court of Appeals for the Tenth Circuit issued its decision upholding Judge Carrigan's June 1986 ruling in the lawsuit brought by three US uranium producers against DOE. The appeal concerned Counts I and II of the original five-count suit; the other counts had been resolved earlier. Count I sought to force DOE to limit the enrichment of non-US-origin uranium feed material, so as to ensure a viable US uranium industry, as called for under an amendment to the Atomic Energy Act of 1954. Count II sought to declare the Utility Services Enrichment Contract (USEC) null and void. The Appellate Court's decision affirmed the earlier decision on Count I, and remanded Count II back to the District Court for further consideration, noting that the plaintiffs' (the producers') "standing" was still in question.

### Background

The position of the three plaintiffs in the lawsuit against DOE is primarily based on amendments to the Atomic Energy Act of 1954. The Act [Section 161(v)] provides that enrichment of non-US origin uranium for use in US facilities shall be limited so "as to assure the maintenance of a viable domestic industry." The Act has been used earlier to limit uranium imports into the USA, and so provides a precedent for the producers' legal action. Prior to 1974, this language was interpreted by the US Atomic Energy Commission (AEC) as prohibiting *any* enrichment of non-US origin material for domestic end use.

However, on November 27, 1973, the AEC published in the Federal Register notice of its intent to relax and eventually eliminate this prohibition. The following table outlines the AEC's timetable for accomplishing this phasing out of the limitation:

| Calendar Year | Percentage of Enrichment Customer's Feed Which May Be of Non-US Origin |
|---|---|
| 1977 | 10 |
| 1978 | 15 |
| 1979 | 20 |
| 1980 | 30 |
| 1981 | 40 |
| 1982 | 60 |
| 1983 | 80 |
| 1984 and beyond | 100 |

This proposal was not finally adopted until October 25, 1974. In order to assure a viable domestic uranium production industry, the AEC announced that it would monitor US utility purchases of non-US origin material with a view toward

**A Brief Chronology of the Lawsuit**

| | | |
|---|---|---|
| 1984 | December | Three US uranium producers file lawsuit in US Tenth District Court. |
| 1985 | June | Uranium Producers of America (UPA) formed. |
| | September | Carrigan rules on Count II of lawsuit. |
| | | DOE announces that US uranium industry is non-viable for 1984. |
| 1986 | January | DOE proposes new enrichment criteria. |
| | June | Carrigan rules on Counts I, III, IV and V. |
| | | DOE files motion for stay of the ruling. |
| | | Producers drop Count V. |
| | July | US Tenth Circuit Court of Appeals grants DOE a stay pending appeal. |
| | | DOE submits final enrichment criteria wording to Congress. |
| | August | House/Senate joint resolution partially approves criteria. |
| | September | Appeals Court panel hears arguments on Counts I and II of lawsuit. |
| | November | DOE declares US uranium industry non-viable for 1985. |
| 1987 | July | US Tenth Circuit Court of Appeals rules on appeal of lawsuit. |

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preventing domestic overdependence on foreign sources of supply. The AEC considered the possibility of reimposing any partial or total embargo as remote, and the utilities were assured that if such a reimposition were deemed necessary, it would not affect agreements entered into prior to a reimposition.

The AEC's decision in 1974 to phase out the embargo was based on the prevailing perception that the rate of nuclear generating growth and associated uranium demand was capable of supporting a thriving domestic uranium industry, as well as absorbing a considerable volume of imported material. In 1974, most sources estimated US uranium requirements for 1985 to be nearly 100 million pounds $U_3O_8$. Actual US requirements for 1985 amounted to only about 30 million pounds.

During the period from 1974 until 1979, few complaints were voiced about the US policies regarding uranium imports. However, in late 1979, following the Three Mile Island accident and the onset of a rash of nuclear plant cancellations, uranium prices began to drop.

Prior to the lawsuit, the struggling US uranium industry had begun to focus its attention on legislative attempts to limit US utility use of non-US-origin uranium. The first attempt occurred in the fall of 1980 when Senator Domenici (R, New Mexico) attempted to attach an amendment to DOE's 1981 appropriations bill. The amendment was deleted from the bill when requisite support failed to materialize (see Report 146, October 1980).

Senator Domenici tried again in March 1982 when he proposed the requirement that 80 percent of the uranium used by US reactors must be of US origin. This attempt also failed, and the pro-embargo forces achieved neither their original 20-percent limit nor a compromise 37.5-percent limit on imports of non-US-origin uranium.

In 1983, legislation was enacted that provided for studies, reports, and avenues for action in the event uranium imports exceeded or were expected to exceed 37.5 percent in any two consecutive year period. While most US producers regarded this legislation to be a victory at the time, it ultimately provided them little relief. Principally because of the Reagan administration's emphasis on free trade and reluctance to support embargo initiatives of any type, the legislation had little influence on US uranium import policies.

**The Utility Services Enrichment Contract (USEC)**

Since 1982, DOE had been experimenting with replacing the Adjustable Fixed-Commitment Contract with other types of contracts. In 1983, DOE introduced the Interim Sales Contract and later, the Modified Interim Sales Contract, to counter terminations by 3.5-year Requirements Contract holders. In December 1983, DOE presented drafts of a new "Requirements Contract" to utility executives. This became the Utility Services Enrichment Contract (USEC). In January 1984, DOE released a final draft USEC that included the following items:

1. Customers had to *agree* to convert to the new USEC by October 1, 1984.

2. Adjustable Fixed-Commitment Contract (AFC) holders could reduce their Fiscal Year 1985 and 1986 SWU requirements by 10 and 25 percent, respectively.

3. Requirements contract holders could convert and *immediately* begin taking only 70 percent of requirements from DOE.

4. The lead time for changing the commitment percentage was reduced to five years.

5. Termination charges were reduced to zero upon 10 years' advance notice.

6. Requirements above the minimum commitment could be purchased from any source beginning in FY87.

In this context the USEC, a requirements-type contract which reduces and defers uranium demand, became the final affront to uranium industry expectations. In addition, a surcharge was added making tails assays above 0.20 w/o $U_{235}$ less attractive and, as the result of individual negotiation, a number of utilities gained the right to utilize existing inventories of enriched product, further reducing and delaying the need for new supplies of material.

Despite a series of meetings with DOE and the threat of a lawsuit since early 1984, the US producer group was unable to obtain any tangible relief from DOE. DOE spent much of 1984 developing enrichment policies that would allow retention of its market share which was under challenge from foreign suppliers and the secondary market.

**The Uranium Producers vs. DOE Lawsuit**

In December 1984, three US producers — Western Nuclear, Inc.; Energy Fuels Nuclear, Inc.; and Uranium Resources, Inc. — filed a five-count lawsuit against DOE in the US Tenth Circuit Court in Denver, Colorado. Judge Jim Carrigan was assigned the case. The lawsuit was the culmination of efforts, begun in 1980, to protect domestic uranium production from low-cost imports, and to maintain the viability of the domestic industry.

*Count I* requested a reimposition of the US embargo on the enrichment of foreign uranium. It asserted that, under the Atomic Energy Act (161(v), 42 U.S.C. 2201(v), enacted in 1964), DOE is obliged to limit the enrichment of foreign-origin uranium for domestic end use so as to "assure the

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maintenance of a viable domestic uranium industry." The producers asked the court to take three actions under this count:

1. To declare the meaning of the term "viable" as employed in 161(v);

2. To order DOE to begin proceedings leading to the adoption of limits on enrichment of foreign-source uranium for end use;

3. To order DOE to impose interim limitations on such enrichment, pending the outcome of the proceedings.

In *Count II*, the suit sought a declaration that the USEC is null and void and an order prohibiting DOE from adopting a generic enrichment contract without compliance with the Administrative Procedures Act. (On December 27, shortly after the filing of the suit, the General Accounting Office reported several irregularities in the USEC which may have violated the law, including:

1. The issuance of the new contract did not comply with the Administrative Procedures Act.

2. The price ceiling in the USEC was not authorized by the enrichment criteria.

3. Certain accounting procedures used to write down plant assets were misapplied.)

*Count III* sought to require DOE to allow customers to vary their tails assays at no charge, because the surcharge for the variable tails assay option (VTAO) under the USEC tends to reduce uranium consumption.

*Count IV* sought to prohibit the use of the federal government stockpile, either through sales of pre-production inventories or through over-feeding the enrichment cascades to save power costs.

*Count V* sought judicial validation and enforcement of the principle that the US industry shall be capable of supplying 100 percent of US requirements at any time, and under any hypothetical supply disruption.

In June 1985, a trade association called the Uranium Producers of America (UPA) was formed. The new association's main goals were the enactment of effective mill tailings legislation and the recognition by the government of an obligation to ensure that a major share of US uranium requirements will be supplied by domestic production. The UPA later filed a supporting brief on behalf of the plaintiffs in the lawsuit against DOE.

**Carrigan's First Ruling — Invalidation of the USEC**

In September 1985, two events took place that greatly affected the US, and the worldwide, uranium industry. In the US District Court, Judge Carrigan ruled that DOE's USEC "amounts to a change in criteria under which enrichment services are to be performed." Because the contract was not submitted to Congress for review as required by law, Carrigan declared the USEC null and void.

Judge Carrigan's ruling, first announced September 16 and amended September 19, addressed Count II of the five-count uranium producers' civil suit. Under the Atomic Energy Act, DOE is required to establish written criteria describing terms and conditions for enrichment services. Furthermore, the adoption of any new criteria requires submission of the contract to Congress for review. In his order, Judge Carrigan stated that the critical issue regarding the USEC was that it "...[amounted] to new criteria governing enrichment." He cited three examples:

1. Existing criteria governing enrichment required that the primary DOE enrichment contract must be of a Fixed Commitment type, which the USEC clearly is not.

2. The USEC sets a ceiling price for enrichment services, which conceivably could prevent the government from recovering its costs. In 1973, for the same reasons, a similar provision which guaranteed a ceiling price was deleted from original criteria established in 1966.

3. Provisions in the USEC that base termination penalties on the period of notice that the customer gives DOE, rather than on recovery costs derived from DOE estimates of customer terminations, should be considered new criteria.

Thus, Judge Carrigan declared the contract null and void, and entered a summary judgment in favor of the producer group and against DOE with respect to Count II of the suit. DOE then filed a notice of its intent to appeal the ruling, a measure which extended to 60 days the period allowed for filing an appeal.

**Non-Viability of the US Uranium Industry**

On September 26, 1985, one week after Carrigan's ruling on Count II of the lawsuit, Energy Secretary Herrington announced that the US uranium industry was not viable. Declaring that "I have taken steps to help the miners and millers in this important industry that is currently under a great deal of strain", he:

1. Authorized DOE to offer a free VTAO each year to all customers that commit to buy 100 percent of their requirements from DOE over a rolling five-year period. It would save about $9/SWU for customers selecting 0.30 weight-percent tails. This item was being sought under the still-pending Count III of the producers' suit against DOE.

2. Postponed for one year a DOE plan to feed some of its own uranium stockpile into enrichment plants. This item was also sought in the producers' suit (Count IV).

3. He asked the US Trade Representative to examine the

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facts and implications of uranium imports and corresponding foreign trade and policy issues with a view to determining the appropriate courses of action under US trade laws.

One of the reasons given for Herrington's declaration of non-viability was the US mining industry's reported loss of more than $200 million for 1984. That amount was a decline of $240 million from 1983, when the industry reported a net profit of almost $40 million, which enabled then-Energy Secretary Hodel to declare the industry viable. Those figures did not take into account the producers that had already been forced out of the business. That DOE was able to wait so long to recognize what had been evident for at least three years indicated that the entire issue of the industry's viability was determined much more by political factors than by economic ones.

Following the non-viability determination, the Justice Department, on behalf of DOE, and the three US producer plaintiffs, filed a new round of cross-motions for summary judgment in the Denver lawsuit. In addition, the UPA filed an *amicus curiae* brief on behalf of the plaintiffs. The plaintiffs' principal thrust was aimed at Count I of the suit, and argued that since the industry had been found non-viable, DOE must *immediately* cease all enrichment of non-US uranium destined for use in US reactors, pending development of new criteria governing the use of non-US-origin material.

**Proposed New Criteria Governing Enrichment**

On January 29, 1986, DOE formally proposed new criteria to govern its uranium enrichment contracts. The new criteria, submitted in a proposed amendment to the US Code of Federal Regulations, constituted the first substantial response to Carrigan's ruling that the USEC did not conform to the existing criteria governing DOE contracts. (Report 206 [October 1985] describes the Court ruling and the lawsuit against DOE.)

Apparently concluding that the most favorable response consisted of changing the federal regulations governing enrichment, DOE drafted extensive revisions to the existing criteria, and submitted the proposed criteria for a 45-day Congressional review once the final wording was established. Among the proposed changes in the criteria were the following significant points.

1. *Enrichment of Foreign-Origin Uranium.* (§762.3) "Domestic customers must certify the country of origin of feed material delivered to DOE." No restrictions were specified against any particular origin, and non-US customers were not required to certify feed origin. The rationale was that this requirement would facilitate the monitoring of non-US uranium use.

2. *Prices.* (§762.4) "DOE shall negotiate prices in individual enrichment contracts in accordance with an overall approach intended to maintain the long-term competitive position of DOE while obtaining the recovery of the government's costs over a reasonable period of time." Because neither the phrase "long-term competitive position" nor "a reasonable period of time" were defined, this section could be used by DOE to justify a wide-ranging, subjective price structure which varies from one customer to another and *is* not subject to Congressional review. There was no reference to floor or ceiling prices.

3. *Costs.* (§762.5) "DOE will establish charges for enrichment services on a basis that recovers appropriate government costs over a reasonable period of time. Such costs will be determined on a basis that includes the costs incurred in providing enrichment services to civilian customers..." DOE apparently sought to assure its customers that it would not spend more than it earns. Nevertheless, the unspecified time constraint and the term "*appropriate* government costs" allowed DOE ample flexibility to act in an unaccountable manner in any particular fiscal year.

4. *Nondiscrimination.* (§762.7) "The same prices, as well as other terms and conditions, shall be available to all similarly situated customers on a nondiscriminatory basis, reflecting the cost of the enrichment services supplied to those customers." The nondiscriminatory claim was effectively nullified by the ambiguity of the phrase "similarly situated."

**Carrigan Rules on Remaining Counts**

On June 20, 1986, Judge Carrigan issued his ruling on the remaining counts in the lawsuit filed in December 1984. The full text of Carrigan's order, covering Counts I, III, IV and V, is reprinted below.

Count I, which asserted that DOE violated the Atomic Energy Act of 1954 [42 U.S.C. Sec. 2201(v) as amended], remained the most significant issue in the litigation. Part of the Act states that DOE, "...to the extent necessary to assure a viable domestic uranium industry, shall not offer such (enrichment) services for source or special nuclear materials of foreign origin intended for use in a utilization facility within or under jurisdiction of the United States." In September 1985, the Secretary of Energy had declared the US industry non-viable. On the basis of that declaration and other arguments, Carrigan found that the producers were indeed entitled to relief under section 2201(v) of the Atomic Energy Act.

The producers had earlier asked the Court to order DOE to commence a rulemaking leading to the adoption of limits on the enrichment of foreign-source uranium for domestic end use, and to impose interim limitations on such enrichment pending the outcome of those proceedings. Carrigan ruled that DOE had violated the Act, denied DOE's requests to stay

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the proceedings, and granted the producers' motion for summary judgment. Carrigan then asked that counsel for plaintiffs and defendents jointly prepare for his signature an order consistent with his ruling. The counsel for DOE declined to participate. The producers' proposed order contained the provision that 75 percent of the uranium enriched by DOE from June 6, 1986, to December 31, 1986, for use in US reactors must be of US origin; and that as of January 1, 1987, and continuing until the viability of the domestic uranium industry was assured, DOE shall not enrich any non-US-origin uranium for use in US reactors.

DOE filed an opposition to the proposed order, listing as grounds the following:

1. "An injunction placing any restrictions on enrichment of foreign (uranium) by DOE will create hardships for DOE, the domestic utilities and their customers, and raises serious international policy issues..."

2. (The proposed order) "is inconsistent with 42 U.S.C. Sec. 2201(v) and exceeds the request for injunctive relief requested by (the producers)... Any such injunction clearly usurps both the role of the executive branch to establish criteria and the role of the legislative branch to review such criteria."

DOE concluded by requesting that the proposed order be modified accordingly. However, the order signed by Carrigan closely resembled the producers' draft. It called for immediate *injunctive* relief, ordering the same provisions for limitations on enrichment of foreign uranium for use in US reactors as were contained in the producers' proposal. (Injunctive relief requires some action on the part of DOE, as opposed to *declaratory* relief, which only would have expressed the opinion of the Court without ordering anything to be done.) Carrigan added that, if DOE believed that *less restrictive* criteria would be sufficient to maintain a viable domestic

**IN THE UNITED STATES DISTRICT COURT**
**FOR THE DISTRICT OF COLORADO**

Civil Action No. 84-C-2315

WESTERN NUCLEAR, INC., et al.,

Plaintiffs,

v.

F. CLARK HUFFMAN, et al.,

Defendants.

**ORDER**

CARRIGAN, J.

Oral argument was heard on June 5, 1986, on all pending motions in this case. The motions are directed to counts I, III, IV and V of the plaintiffs' complaint. Having heard the arguments of counsel with respect to the pending motions, having read the extensive briefs, and being fully advised, I hereby enter the following orders:

1. Plaintiffs' Motion for Summary Judgment with respect to Count I is granted and the defendants' Cross-motion for Summary Judgment with respect to Count I is denied. Defendants' request for a stay with respect to Count I is denied.

In light of the record, including affidavits submitted by the plaintiffs and *amici*, and including the information contained as part of the Secretary of Energy's determination in September 1985 that the domestic uranium industry was not viable, and in light of the Department of Energy's continuing refusal to recognize its obligations under 42 U.S.C. § 2201(v), I find that there is an immediate necessity for injunctive relief and therefore order as follows:

Given the Department of Energy's need to plan its implementation of the mandate of § 161(v) of the Atomic Energy Act, 42 U.S.C. § 2201(v), and pending the completion of the rule-making ordered herein: (a) the Department shall restrict its enrichment of source or special nuclear materials of foreign origin intended for use in a utilization facility within or under the jurisdiction of the United States to twenty-five percent of such materials enriched over the time period June 6, 1986, to December 31, 1986; (b) as of January 1, 1987, and continuing until the viability of the domestic uranium industry is assured, the Department shall not offer or provide any enrichment services for source or special nuclear materials of foreign origin intended for use in a utilization facility within or under the jurisdiction of the United States.

The Department shall commence administrative rule-making proceedings to establish criteria for providing enrichment services that shall comply with the mandate of 42 U.S.C. § 2201(v) to assure the maintenance of a viable domestic uranium industry. These criteria shall include the extent to which enrichment services may be made available for source or special nuclear material of foreign origin intended for use in a utilization facility within or under the jurisdiction of the United States. If the Department believes that criteria less restrictive than those imposed by this order would assure the maintenance of a viable domestic uranium industry, then the Department shall clearly articulate its reasons for such a position.

The court retains jurisdiction of this matter to assure compliance with this order.

2. With respect to the issues raised by Count III of the complaint, and the motions pending concerning Count III of the complaint, the defendants' Motion for Stay is granted for ninety days.

3. With respect to Count IV of the complaint, the defendants' Motion to Dismiss is denied and the defendants' Motion for Stay is denied. The defendants' Motion for Summary Judgment with respect to Count IV is granted.

4. Upon motion of the plaintiffs, there being no objection from the defendants, the plaintiffs are granted leave to withdraw Count V of their complaint without prejudice.

Dated at Denver, Colorado, June 10, 1986.

BY THE COURT:
JIM R. CARRIGAN, JUDGE
UNITED STATES DISTRICT COURT

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uranium industry, DOE must "clearly articulate its reasons for such a position." Carrigan also retained jurisdiction over the matter to assure compliance with the order.

Several days later, DOE filed three documents in the District Court.

1. A *Notice of Appeal* advised that DOE was appealing to the Tenth Circuit Court of Appeals the order granting the producers summary judgment on Count I and entering an injunction on that Count.

2. A *Motion for Stay Pending Appeal* requested an order staying the injunction entered by Carrigan, pending resolution of the appeal on Count I.

3. A *Memorandum in Support of Motion for Stay Pending Appeal* argued the rationale behind DOE's motion for stay pending appeal.

While the issues in Count I had caused the greatest amount of speculation and concern, Judge Carrigan also ruled on the remaining counts in the lawsuit. (He had ruled on Count II in September 1985.) *Count III* sought to require DOE to allow customers to vary their tails assays at no charge, because the surcharge for the variable tails assay option (VTAO) under the USEC tends to reduce uranium consumption. Carrigan granted DOE's motion for a stay of proceedings for 90 days.

*Count IV* sought to prohibit the use of the federal government stockpile, either through sales of pre-production inventories or through over-feeding the enrichment cascades (to save power costs). Apparently persuaded that DOE had not and would not be using its stockpile in such a manner, Carrigan denied DOE's motions for dismissal and stay, but granted summary judgment *in favor of DOE* on this issue.

At the Court's suggestion, producers' counsel moved to *withdraw Count V*, and leave was granted to withdraw it without prejudice. Among other issues, Count V had sought judicial validation and enforcement of the principle that the US uranium industry shall be maintained in a condition such that it shall be capable of supplying 100 percent of US requirements at any time.

**DOE Appeals the Decision**

Observers expected Judge Carrigan to either grant or deny the motion for stay within a few weeks, but as of early July 1986, he had not responded. DOE then took the stay request to the Tenth Circuit Court of Appeals (which has jurisdiction over matters under appeal from the District Court). DOE's application to stay the order was heard by three Circuit Court Judges, who ruled on July 21, 1986, that the order be stayed until further order of the Circuit Court.

The Circuit Court also ordered that the issues involving Count I should be argued and submitted together with the issues of Count II of the five-count lawsuit, in an expedited hearing on September 11, 1986. (Count II pertained to the legality of the USEC, which Judge Carrigan ruled to be null and void in September 1985.) That issue had been under appeal in the Tenth Circuit Court since then.

DOE's *Memorandum in Support of Motion for Stay Pending Appeal* was reprinted in its entirety in Report 215 (July 1986). It argued the rationale behind DOE's motion for stay pending appeal. Among other reasons, DOE stated that:

1. DOE already had in its possession a high percentage of foreign feedstocks designated for use in US reactors. DOE claimed the order would prevent it from enriching all of the delivered feedstock needed for US reactors. Therefore, domestic utilities and DOE would suffer "irreparable injury without a stay," which "could result in shutdowns of domestic reactors."

2. The injunction "impacts adversely on foreign trade, foreign policy, and the nuclear non-proliferation policy of the United States," and is not in the public interest.

3. Finally, DOE maintained that the injunction oversteps the limits of statutory interpretation, equating Carrigan's injunction with judicial rulemaking in that it effectively changes the enrichment criteria without Congressional review as required by the Atomic Energy Act.

The stay pending appeal of the District Court injunction effectively delayed the onset of some potential problems for DOE. At least two US utilities had notified DOE that they intended to deliver non-US origin feed for upcoming enrichment campaigns. If DOE had responded that it could not enrich that material under the terms of the injunction, those utilities might have turned to the secondary market for enrichment or to one of the primary enrichers overseas for that delivery. It is possible that some USEC holders would have followed with similar strategies in the next few months if the stay had not been granted, but it is likely that only those with substantial inventories of non-US feed would have responded in that manner.

**Issuance of the Proposed Enrichment Criteria — July 1986**

On July 24, DOE's final wording of the criteria had been established and was submitted to Congress. It appeared in the *Federal Register* on July 29, 1986. Prior to 1977, the Joint Committee on Atomic Energy (which consisted of members of both the House of Representatives and the Senate) provided oversight of AEC activities, including the review of uranium enrichment criteria. That committee was abolished in 1977, and although its functions have been assigned to other House and Senate subcommittees, no particular committees were specified.

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In general, the proposed criteria submitted to Congress in July 1986 were not substantially different than the language issued for review and comment in January. DOE stated that it had "considered all the comments carefully in its deliberations concerning the revised criteria and has modified the proposed criteria where appropriate." These modifications included the following.

1. *General* (§762.1) — Two additions to this section required that enrichment contracts must specify the customer's commitment to DOE to take services and the charge for cancellation of that commitment, and that contracts must be long term in nature, unless a short-term contract would "promote the objectives of the [Atomic Energy Act]."

2. *Enrichment of Uranium of Foreign Origin* (§762.3) — DOE removed the sentence requiring US customers to certify the country of origin of the feed material, replacing it with, "DOE may not restrict the enrichment of uranium of foreign origin for domestic use except to the extent it determines such a restriction is necessary to assure the maintenance of a viable domestic uranium industry." This new wording carefully tied the issue of industry viability with foreign uranium enrichment restrictions, giving DOE the perogative to decide whether restrictions would actually help the US industry. If DOE determined that restricting the enrichment of foreign uranium would not sufficiently revive the US production industry, it would not be compelled to act. Indeed, DOE had already argued (with support from the US Trade Representative, among others) that enrichment restrictions would not necessarily assure the viability of the US industry. Predictably, this revision was consistent with the legal argument made by DOE with respect to Count I in the producers' lawsuit against DOE (see Report 215 [July 1986], page 3).

In an extensive argument in the *Supplementary Information* to the proposed criteria submitted to Congress, DOE noted the existence of the US District Court injunction preventing it from enriching foreign-origin uranium for US use. (The injunction was at that time stayed pending appeal.) However, DOE stated that it "believes that the [District Court] judgment is erroneous." DOE added, "In adopting section 762.3, DOE is mindful of the ongoing nature of the...litigation. Section 762.3 is being adopted at this time, notwithstanding the...litigation, in order to formally record DOE's interpretation of Section 161(v) (of the Atomic Energy Act), (and) to state DOE's determination that restrictions on enrichment of foreign-origin uranium continue to be inappropriate..."

**The Criteria's Relationship to the District Court Rulings**

A US District Court ruling interpreting a federal statute will take precedence over an administrative rulemaking. Thus, if upheld in the Tenth Circuit Court of Appeals, Judge Carrigan's order requiring limitations on the enrichment of foreign-origin uranium for use in US reactors would take effect (absent further stays or appeals) regardless of any DOE rulemaking on that issue, or the presence of criteria which specifically prohibit limitations. Moreover, as part of his ruling, Carrigan had ordered DOE to commence a rulemaking procedure to establish criteria consistent with his order. In essence, DOE ignored that order and proceeded with a rulemaking that was consistent with its interpretation of the relevant portions of the Atomic Energy Act that deal with assuring the viability of the domestic uranium industry.

The validity of the last section (§762.15) of the proposed criteria also depended on the outcome of the producer/DOE litigation on appeal before the Tenth Circuit. Judge Carrigan ruled (as to Count II of the lawsuit) that certain terms contained in the USEC amounted to a change in the criteria governing enrichment, and, because there had been no Congressional review, the contract was null and void. "Prior Contracts" (§762.15) states that "All contracts under which DOE was providing enrichment services prior to the adoption of these criteria are valid. These prior contracts may be amended to conform to these criteria without penalty, if both parties agree." DOE received comments to the effect that this section was an improper attempt to retroactively validate the USEC following Carrigan's null and void ruling. However, DOE maintained that "a change in criteria should not invalidate existing contracts," and that the contracts were negotiated "in good faith between DOE and its customers." Again, DOE had to prevail in the appeal process in order to successfully implement this section of the criteria.

**Congressional Action on the Enrichment Criteria**

In October 1986, Congress unexpectedly failed to disapprove the new enrichment criteria that DOE had proposed on July 24. Although separate joint resolutions were passed in the Senate and House of Representatives to disapprove the criteria, Congress was unable to attach the resolutions to any pending legislation. One resolution had been attached as an amendment to a virtually veto-proof debt reduction bill, but the bill was stripped of all amendments immediately prior to its passage.

Congress did, however, succeed in effectively nullifying those sections of the new criteria that had caused the most controversy by passing a joint resolution with the following introduction:

"None of the funds provided in this joint resolution or in any other law may be used to implement the following provisions of the uranium enrichment criteria submitted to Congress on July 24, 1986."

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In effect, the resolution provides for funding of the new criteria, except for five important sections. Those sections denied government funding (effectively making them difficult to implement) are the following.

1. "Section 762.3, which specifies the permitted enrichment of source material of foreign origin for use in domestic utilization facilities."

2. "The third sentence of section 762.11 (pertaining to quantities and form of feed and product material), to the extent that it provides limitations on free choice of transaction tails assays from 0.2 to 0.3 w/o $U_{235}$ or imposition of an additional charge for selections in that range." In other words, DOE had to provide a free Variable Tails Assay Option (VTAO).

3. "Section 762.15 (pertaining to prior enrichment contracts), to the extent it might be construed to validate contract provisions permitting unrestricted delivery and enrichment of foreign-origin feed material after a final court decision requiring restriction(s) ... or permitting imposition of additional charges" for the VTAO. In other words, DOE could not implement this section in order to circumvent a court decision requiring foreign-origin uranium restrictions or a VTAO surcharge.

4. "Any portion of the criteria or provision in any contract which permits or results in a reduction of the amount of feed material otherwise required to be delivered to DOE by commercial customers as a result of the use of uranium from government stockpiles ... ", i.e., the practice of over-feeding from the DOE stockpile.

5. "Section 762.6 (Recovery of Prior Unrecouped Government Costs), insofar as it may convey a determination of the level of unrecouped costs that must be returned to the Treasury by the enrichment program, which determination shall be made by the Congress in future legislation." Thus, the issue of the size of DOE's enrichment debt would be postponed until Congress reviewed it again.

In essence, by withholding funding for those sections, Congress stripped the criteria of the most controversial provisions. Congress appears intent on studying the cost recovery issue further, rather than allowing DOE to establish prices and costs based on its determination of the enrichment debt. In effect, the USEC was partially approved by the resolution, but those provisions of the contract relating to foreign-origin enrichment, the free VTAO, and over-feeding from the DOE stockpile were not approved. As far as the question of enrichment of foreign-origin uranium for US use, Congress specifically stated that the issue was to be decided entirely by the outcome of the DOE/US producers litigation.

"... foreign-origin uranium may be enriched for domestic use only until a final judgment or dismissal in the pending litigation that determines whether section 161(v) of the Atomic Energy Act requires restriction of enrichment of foreign-origin source material, in which case the criteria shall be amended to impose such restrictions, or such unrestricted enrichment may continue, whichever is consistent with the decision of this question in the pending litigation..."

Thus, Congress would not allow DOE to use the new criteria to circumvent the decision that would be made by the Tenth Circuit Court regarding restrictions of foreign-origin uranium. Moreover, Congress made it clear that its joint resolution should have no impact on the court's upcoming decision:

"No provision of this joint resolution or the July 24, 1986 criteria shall affect the merits of the legal position of any of the parties...in the pending litigation in the United States Court of Appeals for the Tenth Circuit..."

**Conclusion**

During the latter half of 1986 and throughout the first half of 1987, until the July 20 decision by the Appeals Court, the lawsuit's effect on the uranium market was primarily one of uncertainty. Nearly all participants in the nuclear fuel market, but especially those in the USA, waited anxiously for a resolution of the lawsuit. Many US utilities and producers have used the year since the appeal was granted to adjust their inventories, increasing the amount of US-origin material held, in anticipation of a situation in which only US-origin might be usable as enrichment feed at DOE.

However, even though a decision has been reached by the Appeals Court, several avenues still are available for DOE to contest the ruling. Essentially, the case has come to pivot on an eventual final ruling on Count I of the suit — whether DOE will be required to limit enrichment of non-US-origin uranium. While that legal matter awaits resolution, it is probable that Congress will take the necessary steps to decide the issue of whether the US uranium production industry should be protected against competition from lower-cost uranium imports.

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*CURRENT MARKET DATA*

| July 31, 1987 | Market Values | Active Supply[1] (thousands) | Active Demand[1] (thousands) |
|---|---|---|---|
| **EXCHANGE VALUE** | **$16.75**/lb. $U_3O_8$ | 2,830 | 2,545 |
| **$UF_6$ VALUE** | **$47.50**/kgU | | |
| **CONVERSION VALUE** | **$1.90**/lb. U as $UF_6$ | 0 | 440 |
| **SWU VALUE**<br>0.3 tails assay;<br>delivery within one year | **$75**/SWU | | |
| **LOAN RATE** | **3%**/annum | 1,000 | — |

| | $/lb. $U_3O_8$ | Millions of Pounds | Number of Transactions | Number of Months |
|---|---|---|---|---|
| **TRANSACTION VALUE** | **17.30** | 3.8 | 19 | 3 |

[1]Supply and demand tables in *Current Market Data* section of this Report detail the numbers for each category.

**DEFINITIONS**

1. The **Exchange Value** is Nuexco's judgment of the price at which transactions for significant quantities of natural uranium concentrates could be concluded as of the date indicated.
2. The **$UF_6$ Value** is Nuexco's judgment of the price at which spot and near-term transactions for significant quantities of natural uranium hexafluoride could be concluded as of the date indicated.
3. The **Conversion Value** is Nuexco's judgment of the price at which spot and near-term transactions for significant quantities of conversion services could be concluded in the secondary market as of the date indicated.
4. The **SWU Value** represents Nuexco's judgment of the price at which transactions for the sale of significant quantities of SWUs of stated origin for delivery in the specified time period could be concluded as of the date indicated.
5. The **Loan Rate** is Nuexco's judgment of the annual interest rate at which uranium loans could be concluded as of the date indicated.
6. The **Transaction Value** is a weighted average price of recent natural uranium sales transactions. The calculation is based on prices paid in:
   a. Transactions closed within the previous three-month period for which delivery is scheduled within one year of the transaction date;
   b. At least ten transactions;
   c. Transactions involving a sum total of at least 2 million pounds $U_3O_8$ equivalent.

   The sample time is extended as necessary to include these minima. Other currencies are converted to US dollars using conversion rates in effect on or near the transaction date.

**DERIVATIONS AND COMMENTS**

1. All Market Values are based on:
   a. Data from recently completed transactions.
   b. Data from pending transactions.
   c. Firm bids to buy or borrow, and firm offers to sell or lend.
   d. Prices purchasers or rates borrowers have expressed a willingness to pay, but for which Nuexco is not aware of firm bids to buy or borrow, and prices sellers or rates lenders have expressed a willingness to accept, but for which Nuexco is not aware of firm offers to sell or lend.
2. Prices associated with deliveries under old or renegotiated contracts or other than arm's-length transactions are not included in the determination of these Market Values.
3. In the determination of the Conversion Value, Nuexco does not consider transportation charges other than those customarily provided by primary suppliers of conversion services.
4. The prices of conversion services or SWUs delivered under long-term contracts with primary suppliers are not considered in the determination of either the Conversion Value or SWU Value.
5. For the SWU Value, Nuexco converts SWU prices at varying tails and product assays to equivalent SWU prices at a tails assay of 0.30 weight-percent $U_{235}$ and a product assay of 3.0 weight-percent $U_{235}$, assuming feed costs corresponding to the Nuexco Exchange and Conversion Values determined as of the same date.
6. In calculating the Transaction Value, Nuexco does not account for the price of uranium delivered in connection with contracts which call for "market price" mechanisms. This exclusion applies particularly to contracts in which delivery prices are expressed as a function of future Exchange Values or any other indeterminate variable. Also excluded from the calculation are any other transactions in which the delivery price is defined in such a way that it cannot currently be determined.

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*CURRENT MARKET DATA*

## EXCHANGE VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

| Country (currency) | per lb. $U_3O_8$ in Concentrates | | | per kg. U in Concentrates | | |
|---|---|---|---|---|---|---|
| | This Month (July 31, 1987) | Last Month (June 30, 1987) | 12 Months Ago (July 31, 1986) | This Month (July 31, 1987) | Last Month (June 30, 1987) | 12 Months Ago (July 31, 1986) |
| Australia (dollar) | 23.99 | 23.43 | 27.96 | 62.36 | 60.92 | 72.69 |
| Belgium (comm. franc) | 642.75 | 640.15 | 742.68 | 1,671 | 1,664 | 1,931 |
| Canada (dollar) | 22.32 | 22.53 | 23.51 | 58.01 | 58.58 | 61.13 |
| EEC (ecu) | 14.99 | 14.91 | 17.00 | 38.97 | 38.77 | 44.20 |
| Finland (markka) | 75.38 | 75.21 | 85.34 | 195.98 | 195.53 | 221.87 |
| France (franc) | 103.27 | 103.11 | 116.44 | 268.47 | 268.07 | 302.71 |
| FRG (mark) | 31.06 | 30.90 | 35.89 | 80.75 | 80.34 | 93.30 |
| Italy (lira) | 22,477 | 22,411 | 25,648 | 58,436 | 58,263 | 64,080 |
| Japan (yen) | 2,503 | 2,478 | 2,640 | 6,506 | 6,443 | 6,864 |
| Netherlands (guilder) | 34.98 | 34.82 | 40.46 | 90.93 | 90.53 | 105.18 |
| South Africa (rand) | 34.72 | 34.53 | 42.43 | 90.25 | 89.76 | 110.30 |
| Spain (peseta) | 2,117 | 2,415 | 2,310 | 5,505 | 6,278 | 6,007 |
| Sweden (krona) | 108.27 | 107.92 | 118.96 | 281.49 | 280.56 | 309.28 |
| Switzerland (franc) | 25.74 | 25.68 | 28.80 | 66.91 | 66.76 | 74.87 |
| UK (pound) | 10.50 | 10.56 | 11.39 | 27.30 | 27.45 | 29.62 |
| US (dollar) | 16.75 | 16.90 | 17.00 | 43.55 | 43.94 | 44.20 |

## TRANSACTION VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

| Country (currency) | per lb. $U_3O_8$ in Concentrates | | | per kg. U in Concentrates | | |
|---|---|---|---|---|---|---|
| | This Month (July 31, 1987) | Last Month (June 30, 1987) | 12 Months Ago (July 31, 1986) | This Month (July 31, 1987) | Last Month (June 30, 1987) | 12 Months Ago (July 31, 1986) |
| Australia (dollar) | 24.77 | 23.71 | 28.78 | 64.41 | 61.64 | 74.83 |
| Belgium (comm. franc) | 663.85 | 647.73 | 764.53 | 1,726 | 1,684 | 1,988 |
| Canada (dollar) | 23.05 | 22.80 | 24.20 | 59.92 | 59.27 | 62.93 |
| EEC (ecu) | 15.48 | 15.09 | 17.50 | 40.25 | 39.23 | 45.50 |
| Finland (markka) | 77.86 | 76.10 | 87.85 | 202.41 | 197.85 | 228.39 |
| France (franc) | 106.66 | 104.33 | 119.86 | 277.29 | 271.24 | 311.62 |
| FRG (mark) | 32.08 | 31.27 | 36.94 | 83.40 | 81.29 | 96.04 |
| Italy (lira) | 23,215 | 22,676 | 25,373 | 60,354 | 58,953 | 65,965 |
| Japan (yen) | 2,585 | 2,508 | 2,718 | 6,720 | 6,519 | 7,066 |
| Netherlands (guilder) | 36.12 | 35.24 | 41.65 | 93.92 | 91.61 | 108.27 |
| South Africa (rand) | 35.85 | 34.93 | 43.67 | 93.21 | 90.82 | 113.54 |
| Spain (peseta) | 2,187 | 2,444 | 2,378 | 5,685 | 6,353 | 6,183 |
| Sweden (krona) | 111.83 | 109.20 | 122.46 | 290.73 | 283.88 | 318.38 |
| Switzerland (franc) | 26.58 | 25.98 | 29.65 | 69.11 | 67.55 | 77.07 |
| UK (pound) | 10.85 | 10.68 | 11.73 | 28.20 | 27.78 | 30.49 |
| US (dollar) | 17.30 | 17.10 | 17.50 | 44.98 | 44.46 | 44.50 |

[1]Calculated using currency exchange rates published in the *Wall Street Journal* on July 31, 1987.

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*CURRENT MARKET DATA*

## CONVERSION VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

| Country (currency) | per lb. U as $UF_6$ | | | per kg. U as $UF_6$ | | |
|---|---|---|---|---|---|---|
| | This Month (July 31, 1987) | Last Month (June 30, 1987) | 12 Months Ago (July 31, 1986) | This Month (July 31, 1987) | Last Month (June 30, 1987) | 12 Months Ago (July 31, 1986) |
| Australia (dollar) | 2.72 | 2.50 | 2.96 | 6.00 | 5.50 | 6.53 |
| Belgium (comm. franc) | 72.91 | 68.18 | 78.64 | 160.74 | 150.31 | 173.36 |
| Canada (dollar) | 2.53 | 2.40 | 2.49 | 5.58 | 5.29 | 5.49 |
| EEC (ecu) | 1.70 | 1.59 | 1.80 | 3.75 | 3.50 | 3.97 |
| Finland (markka) | 8.55 | 8.01 | 9.04 | 18.85 | 17.66 | 19.92 |
| France (franc) | 11.71 | 10.98 | 12.33 | 25.82 | 24.21 | 27.18 |
| FRG (mark) | 3.52 | 3.29 | 3.80 | 7.77 | 7.26 | 8.38 |
| Italy (lira) | 2,550 | 2,387 | 2,610 | 5,621 | 5,262 | 5,754 |
| Japan (yen) | 283.88 | 263.97 | 279.55 | 625.84 | 581.95 | 616.29 |
| Netherlands (guilder) | 3.97 | 3.71 | .28 | 8.75 | 8.18 | 9.44 |
| South Africa (rand) | 3.94 | 3.68 | .49 | 8.68 | 8.11 | 9.90 |
| Spain (peseta) | 240.17 | 257.22 | 244.63 | 529.49 | 567.06 | 539.32 |
| Sweden (krona) | 12.28 | 11.49 | 12.60 | 27.08 | 25.34 | 27.77 |
| Switzerland (franc) | 2.92 | 2.74 | 3.05 | 6.44 | 6.03 | 6.72 |
| UK (pound) | 1.19 | 1.12 | 1.21 | 2.63 | 2.48 | 2.66 |
| US (dollar) | 1.90 | 1.80 | 1.80 | 4.19 | 3.97 | 3.97 |

## SWU VALUE AND $UF_6$ VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

| Country (currency) | SWU VALUE delivery within one year (July 31, 1987) | $UF_6$ Value per kg.U in $UF_6$ This Month (July 31, 1987) | $UF_6$ Value per kg.U in $UF_6$ Last Month (June 30, 1987) |
|---|---|---|---|
| Australia (dollar) | 107.40 | 68.02 | 66.20 |
| Belgium (comm. franc) | 2,878 | 1,823 | 1,809 |
| Canada (dollar) | 99.92 | 63.28 | 63.66 |
| EEC (ecu) | 67.12 | 42.50 | 42.13 |
| Finland (markka) | 337.53 | 213.77 | 212.50 |
| France (franc) | 462.39 | 292.84 | 291.33 |
| FRG (mark) | 139.07 | 88.07 | 87.31 |
| Italy (lira) | 100,644 | 63,741 | 63,321 |
| Japan (yen) | 11,206 | 7,097 | 7,002 |
| Netherlands (guilder) | 156.61 | 99.18 | 98.39 |
| South Africa (rand) | 155.44 | 98.44 | 97.54 |
| Spain (peseta) | 9,480 | 6,004 | 6,823 |
| Sweden (krona) | 484.81 | 307.04 | 304.91 |
| Switzerland (franc) | 115.24 | 72.98 | 72.55 |
| UK (pound) | 47.02 | 29.78 | 29.83 |
| US (dollar) | 75.00 | 47.50 | 47.75 |

[1]Calculated using currency exchange rates published in the *Wall Street Journal* on July 31, 1987.

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# NUEXCO

*CURRENT MARKET DATA*

## RECENT TRANSACTIONS[1]

### Uranium Sales

| Nuexco Transaction Number | Delivery Period | Approximate Quantity (thousands of pounds, $U_3O_8$ equivalent) | Approximate Price Range as Percent of Current Exchange or $UF_6$ Value[2] | Seller | Buyer | Remarks |
|---|---|---|---|---|---|---|
| 4108 | 1987 | 101-300 | 88-92 | Producer | Utility | US-origin |
| 4120 | 1987 | 101-300 | R[6] | Intermediary | Utility | |
| 4122 | 1987 | 50-100 | 98-102 | Intermediary | Utility | $UF_6$ |
| 4125 | 1987-88 | 301-600 | 98-102 | Intermediary | Utility | |
| 4126 | 1987 | 101-300 | 98-102 | Intermediary | Utility | US-origin $UF_6$ |
| 4127 | 1988 | 50-100 | 98-102 | Intermediary | Utility | US-origin |
| 4128 | 1988 | 101-300 | 98-102 | Intermediary | Utility | US-origin |
| 4129 | 1987 | 101-300 | 98-102 | Producer | Utility | $UF_6$ |

[1]Transactions listed are not limited to those in which Nuexco was involved, but also include others of which Nuexco is aware.
[2]Where US-origin material is involved, the range includes the Exchange Value (or $UF_6$ Value) *plus* the premium (relative to the Exchange Value or $UF_6$ Value).
[3]If tails assay is unknown or unspecified, Nuexco's calculation of SWU quantity assumes 0.30 w/o tails assay.
[4]Prices are usually normalized to 0.3% tails assay.
[5]Refers to SWU Value that corresponds to SWUs included in transaction. When prices and SWU values are expressed as discounts (e.g., X dollars less than DOE's USEC base price at time of delivery), the percentage refers to the ratio of the *discounts*, not the ratio of the prices.
[6]The notation *R* means that Nuexco either does not know, or that Nuexco has restricted that information to protect client confidentiality.

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## Conversion Services
## Secondary Market Sales

| Nuexco Transaction Number | Delivery Period | Approximate Quantity (thousands of pounds, U equivalent) | Approximate Price as Percent of Current C.V. | Seller | Buyer | Remarks |
|---|---|---|---|---|---|---|
| 4101 | 1987 | 101-300 | 88-92 | Intermediary | Utility | |
| 4119 | 1987 | 330 | R[5] | Utility | R[5] | |
| 4124 | 1988 | 101-300 | 128-132 | Intermediary | Utility | |

## Loan Transactions

| Nuexco Transaction Number | Delivery Period | Approximate Quantity (thousands of pounds, $U_3O_8$ equivalent) | Approximate Price as Percent of Current Loan Rate | Lender | Borrower | Remarks |
|---|---|---|---|---|---|---|
| 4112 | 1987 | 301-600 | R[5] | Utility | Producer | US-origin $UF_6$ |
| 4118 | 1987 | 101-300 | R[5] | Utility | Utility | $UF_6$ |

## Enrichment Services
## Secondary Market Sales

| Nuexco Transaction Number | Delivery Period | Approximate Quantity[2] (thousands of SWUs) | Approximate Price[3] as Percent of Current SWU Value[4] | Seller | Buyer | SWU Origin | Remarks |
|---|---|---|---|---|---|---|---|
| 4130 | 1988 | 101-300 | 98-102 | Utility | Utility | DOE | |

[1]Transactions listed are not limited to those in which Nuexco was involved, but also include others of which Nuexco is aware.
[2]If tails assay is unknown or unspecified, Nuexco's calculation of SWU quantity assumes 0.30 w/o tails assay.
[3]Prices are usually normalized to 0.3% tails assay.
[4]Refers to SWU Value that corresponds to SWUs included in transaction. When prices and SWU values are expressed as discounts (e.g., X dollars less than DOE's USEC base price at time of delivery), the percentage refers to the ratio of the *discounts*, not the ratio of the prices.
[5]The notation *R* means that Nuexco either does not know, or that Nuexco has restricted that information to protect client confidentiality.

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# NUEXCO

*CURRENT MARKET DATA*

## URANIUM SUPPLY
## (July 31, 1987)

| Nuexco Project Number | Delivery Period[1] (Thousands of Pounds $U_3O_8$) Spot or Near-term[2] | Intermediate or Long-term | Remarks |
|---|---|---|---|
| **Available for Sale:** | | | |
| **ACTIVE** | | | |
| 2335 | 270 | — | |
| 2764B* | 150 | — | $UF_6$ |
| 2893A | 720 | — | $UF_6$ |
| 2989 | 40 | — | |
| 2996* | 500 | 500 per year | 1988-90 |
| 3023 | 400 | 500 | $UF_6$ |
| 3121* | 500 | — | |
| 3244 | 250 | 300 per year | 1988-93 |
| 2263 | — | 400 per year | 1989 on |
| 2781 | — | 400 per year | 1988-95 |
| 3123 | | 2,000 | 1988 |
| 3138A* | | 325 | 1988 |
| 3171 | — | 200 per year | 1988-92 |
| TOTAL: | 2,830 | | |
| **INACTIVE** | | | |
| 2297 | 100 | 100 per year | 1988-89 |
| 2933 | 300 | 300 per year | 1988-90 |
| 2967 | 1,000 | — | |
| 3168 | 50 | 100 per year | 1988-92 |
| 3174* | 1,550 | — | $UF_6$ |
| 3280* | 120 | — | $UF_6$ |
| 2981 | — | 600 per year | 1988-91 |
| 3128 | — | 100 | 1988 on |
| 3230* | | 500 | 1988 on |
| TOTAL: | 3,120 | | |

*New or revised since last month.

[1] Measured from the date of this Report.

[2] For delivery within one year. This category excludes material deliverable within one year under other than spot or near-term contracts.

Projects removed since last month: 2625, 3238.

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## URANIUM DEMAND
## (July 31, 1987)

| Nuexco Project Number | Delivery Period[1] (Thousands of Pounds $U_3O_8$) Spot or Near-term[2] | Intermediate or Long-term | Remarks |
|---|---|---|---|
| **Inquiries to Purchase:** | | | |
| **ACTIVE** | | | |
| 2890 | 175 | — | |
| 2893C* | 700 | | $UF_6$ |
| 3149* | 300 | 300 | 1989 |
| 3152* | 260 | — | $UF_6$ |
| 3192A* | 500 | — | |
| 3220* | 250 | — | |
| 3285* | 300 | — | |
| 2936* | — | 1,200 per year | 1990-95 |
| 2962 | — | 500 per year | 1988 on |
| 2985 | — | 675 per year | 1992 on |
| 3137 | — | 4,800 per year | 1993-97 |
| 3193 | — | 700 per year | 1989, 91, 94, 96 |
| TOTAL: | 2,485 | | |
| **INACTIVE** | | | |
| 2798 | 150 | — | |
| TOTAL: | 150 | | |

*New or revised since last month.
[1]Measured from the date of this Report.
[2]For delivery within one year. This category excludes material deliverable within one year under other than spot or near-term contracts.
Projects removed since last month: 2738, 2911, 2984, 3120, 3220, 3249, 3251, 3312.

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# NUEXCO

*CURRENT MARKET DATA*

## CONVERSION SUPPLY AND DEMAND
## (July 31, 1987)

| Nuexco Project Number | Delivery Period[1] (Thousands of Pounds U as $UF_6$) Within 3 Years | Beyond 3 Years | Remarks |
|---|---|---|---|
| **Available for Sale:** | | | |
| **INACTIVE** | | | |
| 2859 | 750 | 750 | |
| 3165 | 330 | — | |
| TOTAL: | 1,080 | | |
| **Inquiries to Purchase:** | | | |
| **ACTIVE** | | | |
| 3151* | 440 | — | |
| TOTAL: | 440 | | |

*New or revised since last month.
[1]Measured from the date of this Report.
Projects removed since last month: 3222.

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## LOAN SUPPLY AND DEMAND
## (July 31, 1987)

| Nuexco Project Number | Delivery Period[1] (Thousands of Pounds $U_3O_8$) Within 1 Year | Beyond 1 Year | Remarks |
|---|---|---|---|
| **Available for Loan** | | | |
| **ACTIVE** | | | |
| 2909 | 1,000 | — | |
| 3262* | 600 | — | |
| TOTAL: | 1,600 | | |
| **INACTIVE** | | | |
| 1938 | 2,000 | — | $UF_6$ |
| 2036 | 500 | — | |
| 2912 | 1,000 | — | |
| 2920 | 2,000 | — | |
| TOTAL: | 5,500 | | |
| **Inquiries to Borrow** | | | |
| **INACTIVE** | | | |
| 3192B* | 50 | — | |
| TOTAL: | 50 | | |

*New or revised since last month.
[1]Measured from the date of this Report.
Projects removed since last month: None.

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# NUEXCO

*CURRENT MARKET DATA*

## SWU SUPPLY AND DEMAND
## (July 31, 1987)

| Nuexco Project Number | Delivery Period[1] (Thousands of SWUs) Spot or Near-term[2] | Intermediate or Long-term | Remarks |
|---|---|---|---|
| **Available for Sale:** | | | |
| **ACTIVE** | | | |
| 2969 | 150 | — | 1988 |
| 3173 | 45 | — | 1987 |
| TOTAL: | 195 | | |
| **INACTIVE** | | | |
| 2571 | 55 | — | 1987 |
| 3213 | 300 | — | |
| 3280* | 25 | — | |
| 3291 | 50 | — | 1987 |
| TOTAL: | 430 | | |
| **Inquiries to Purchase:** | | | |
| **ACTIVE** | | | |
| 2999 | 25 | | 1988 |
| 3286* | 150 | — | 1988 |
| TOTAL: | 175 | | |
| **INACTIVE** | | | |
| 3159* | 30 | — | |
| TOTAL: | 30 | | |

*New or revised since last month.
[1]Measured from the date of this Report.
[2]For delivery within one year. This category excludes SWUs deliverable within one year under other than spot or near-term contracts.
Projects removed since last month: none.

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## US URANIUM TRADE RESTRICTION ANALYSIS

*This article summarizes part of Nuexco's supply-demand forecast for the remainder of this century. A more detailed analysis is presented in Nuexco's Uranium Market Study and Price Forecast.*

### Introduction

This analysis presents scenarios covering several possible restricted market conditions in the USA, that could affect the near to mid-term uranium market. This information is particularly timely in view of the US Court of Appeals' decision affirming Judge Carrigan's earlier decision in the US Producers vs DOE lawsuit. This decision prohibits DOE's enrichment of non-US-origin uranium for use in reactors in the USA.

Nuexco projects in this analysis that an administrative or legislative solution will have been reached by the end of 1988. Congress could pass a law overriding the Circuit Court's prohibition, by placing limits on imports of uranium into the USA, or DOE could conduct an administrative rulemaking to establish the conditions that will be used to "ensure viability" of the US uranium production sector. Any such rulemaking would be subject to the approval of Judge Carrigan, before it could take effect.

Under several hypothetical import restriction cases, output from US producers is expected to increase, the extent of the increase depending on the level of restriction and whether existing contracts and inventories are grandfathered. (Grandfathering means that inventories in place or contracts concluded prior to a given date will be allowed.) Overall, there is a wide variation in the effects on uranium supply and demand, depending on the degree and type of restriction. It is clear that increases in US production above the current level will require price increases.

### Inventories

Through the near term (early 1990s), excess uranium inventories will gradually decrease (Figure 1). In 1985 and 1986, for the first time in a number of years, uranium consumption was greater than production, resulting in a decrease in inventories.

Total uranium inventories normally consist of three components:

1. In-process material, which is uranium in some stage of processing into fuel assemblies, after delivery to the buyer as ore concentrates or $UF_6$.

2. Reserve stocks, independent of in-process material, which are intentionally held as contingency or strategic inventory to assure availability of uranium.

3. Excess inventory on hand, over and above the in-process and reserve inventories.

The categories may be rather fluid in how they are considered by utilities. For example, many utilities may choose to classify excess material as increased reserve stocks and, therefore, plan for its use within the utility. Nuexco's estimates of inventory, for the purposes of this analysis, *exclude* in-process material since it is not normally available for immediate sale. Although Nuexco data show total world uranium inventories as of the beginning of 1986 to have been approximately 500 million pounds $U_3O_8$ (equivalent to over 4 years forward supply), only about half of that amount, 255 million pounds, is classified as excess. This excess was equivalent to about 2.2 years forward supply. The total inventory included approximately 140 million pounds $U_3O_8$ held by producers and 360 million pounds held by utilities. Utilities in the Far East held the greatest relative inventory levels, by a substantial margin, both on a per-MWe and forward-coverage basis. European and US utilities held similar relative amounts, with the European utilities showing slightly higher inventory levels overall.

### Uncommitted Supply

The amount of uranium a producer can deliver includes the producer's inventory, forecasted production, and deliveries of material to that producer that are purchased from others. A producer's uncommitted supply is the sum of those amounts less the producer's delivery commitments during that period. While some producers' commitments may exceed their total supply, most show some uncommitted supply. Some utilities and traders also have excess inventory that they intend to sell, which is included in uncommitted supply.

Any significant restrictions placed on imports into the USA will cause shifts not only in the production balance between US and non-US producers, but also in the markets available to non-US producers, affecting the calculation of uncommitted supply. This forecast includes analyses for free market, moderate, and severe US-market restrictions, respectively (Figure 2). A moderate restriction is assumed to be one in which a 50-percent import restriction is imposed, with full grandfathering of existing contracts allowed. A severe restriction would be one in which a 75-percent import limitation prevails. Increasing degrees of restriction will cause upward shifts in the uncommitted supply, because additional production in the USA will diminish non-US producers' access to the US market, and hence otherwise firm commitments in that market.

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*ANALYSIS & COMMENTARY*

**Figure 1**
**FORECAST OF WORLD URANIUM INVENTORIES**
**(excluding in-process material)**

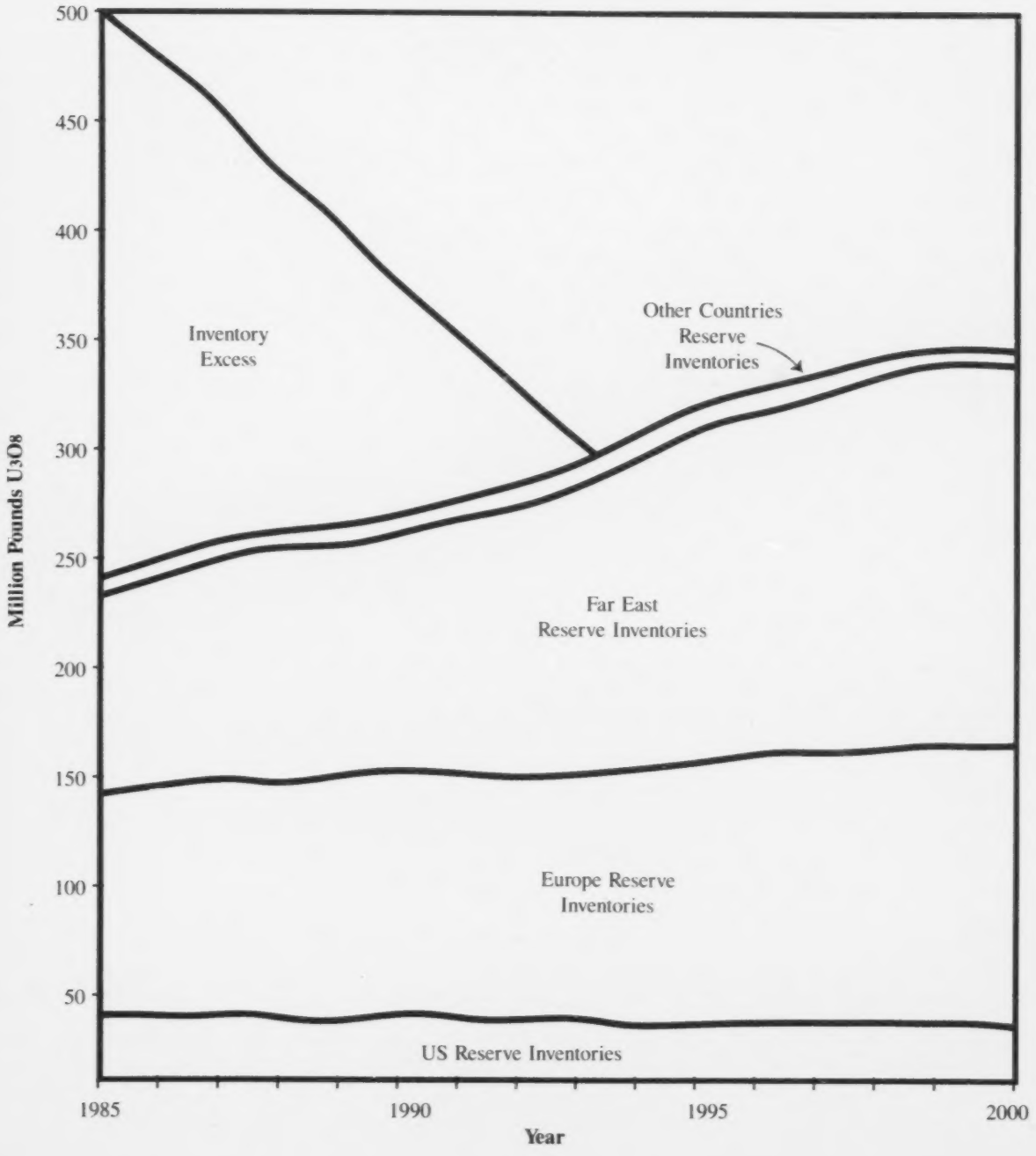


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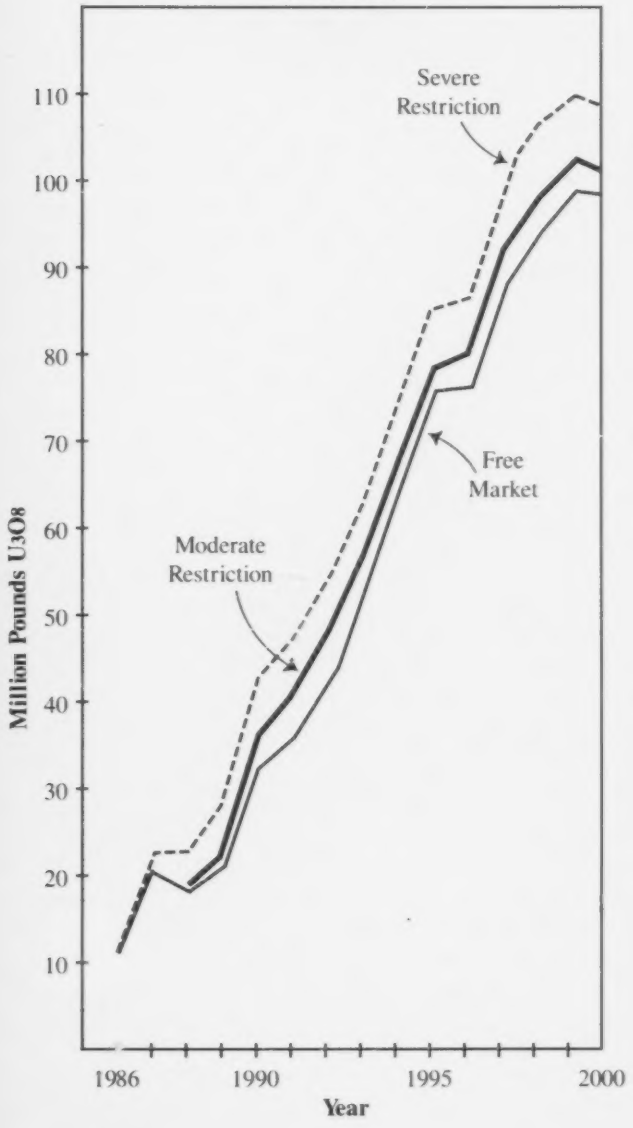
**Figure 2**
**EFFECT OF US MARKET RESTRICTION ON WORLD UNCOMMITTED URANIUM SUPPLY (1986-2000)**




**Material Balance**

Assuming a free-market condition, inventories will decrease to the estimated required minimum by 1993. The required minimum is estimated using the different regions' reserve inventory forward requirements. The nominal year-end inventory takes into account inventory on hand at the beginning of each year, adds specified production (production expected to occur in all projected market cases), and subtracts projected annual consumption. Although no additional supplies will be needed to maintain an overall minimum inventory level in the near term, excess inventory will drop from approximately 200 million pounds $U_3O_8$ equivalent in 1987 to about 65 million pounds $U_3O_8$ equivalent by 1991. By 1993, the excess will have been used up and additional supplies will be needed to maintain minimum inventory levels.

Most of the 200 million pounds $U_3O_8$ equivalent in excess inventory at the end of 1987 will be used by the utilities holding it. A much smaller amount will be sold on the market during the forecast period, mainly from producer inventories. However, not all of the projected future demand increase will be supplied by increased uranium production — increasing use of reprocessing may supply a portion of the increase.

**Unfilled Requirements**

Unfilled requirements are the amounts of uranium that will be needed, but that have not yet been purchased. These requirements equal the future reactor consumption, less future deliveries under existing contracts, expected inventory drawdown (or plus expected inventory buildup, whichever is the case), and any equivalent fuel to be gained through spent fuel reprocessing. Most excess utility inventories are assumed to be held for future self-use by the utility.

There is a wide variation in inventory holdings: some utilities have large inventories and others do not, and in the near term, a number of utilities will have unfilled requirements. Over the forecast period, US utilities have the largest unfilled requirements. Comparing total consumption with unfilled requirements, the USA's unfilled portion is relatively much greater than that of the other geographic areas (Figure 3). Overall, world unfilled requirements are less than 20 percent of consumption through 1991, but increase thereafter.

**Supply and Demand in a Restricted Market**

The Appellate Court ruling in July 1987 has supported Judge Carrigan's June 1986 ruling totally prohibiting the use of non-US-origin feed material for production of enriched uranium at DOE for subsequent use in a reactor in the USA. Our assumption is that a bill introduced into the US Congress in the current or next session (1988) will be enacted that reduces the total prohibition to a partial restriction. Alternatively, the litigants could reach a compromise level of import restriction. Nuexco postulates that such a reduced

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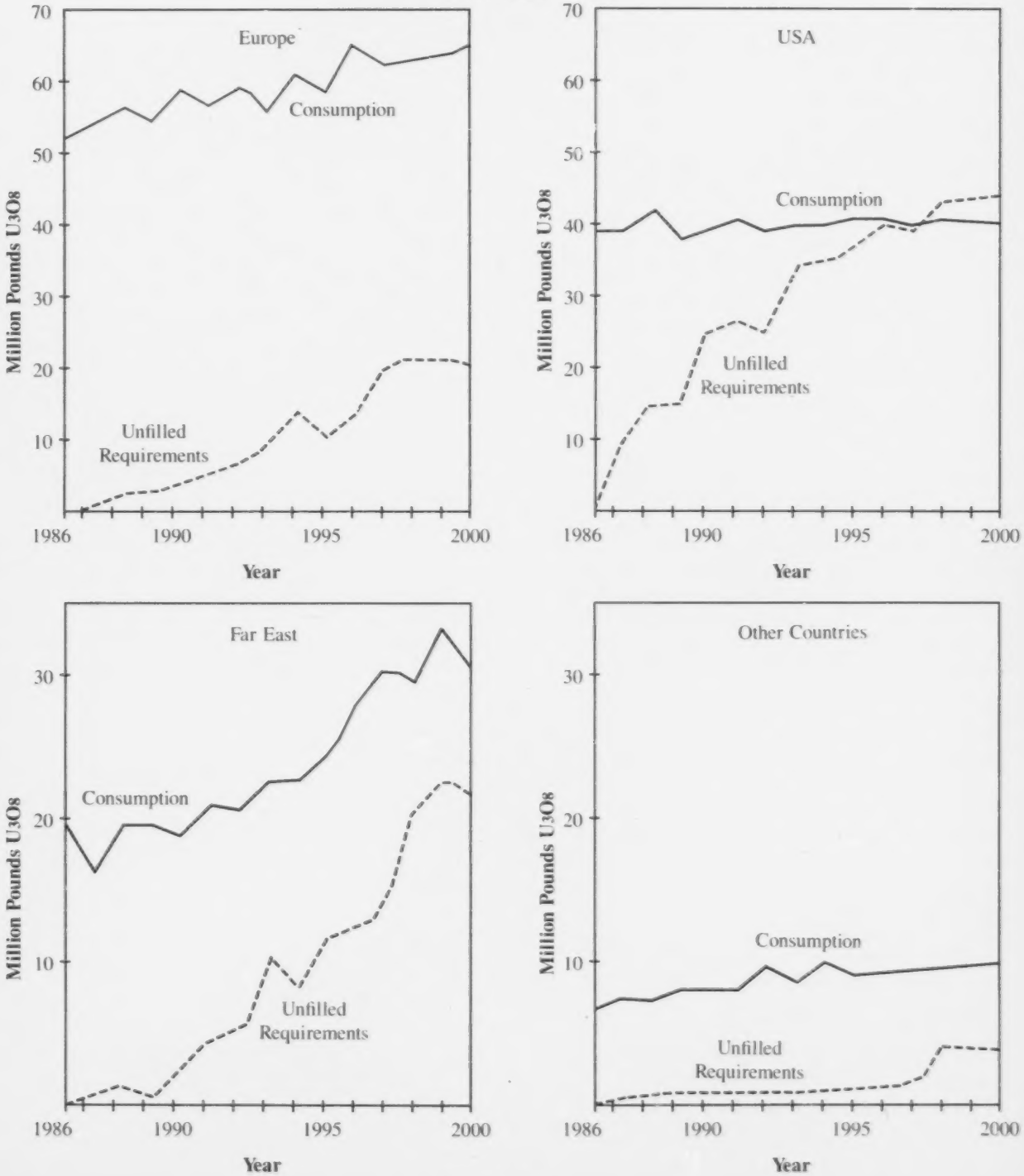
*ANALYSIS & COMMENTARY*

**Figure 3**

**COMPARISONS OF TOTAL CONSUMPTION AND UNFILLED REQUIREMENTS (1986-2000)**

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restriction would likely become effective at the beginning of 1989 meaning that some of 1987 and all of 1988 will fall under a total import restriction. Additionally, Nuexco's analysis indicates that a plausible level of restriction in the postulated Congressional bill or compromise would exceed 50 percent, because a less-than 50-percent restriction would not greatly stimulate the US production industry.

Nuexco's analysis shows that under a 50-percent restriction, with grandfathering of existing contracts allowed, little or no stimulation of US production would occur. In this scenario, about 240 million pounds of material would be allowed as imports through 2000.

If no grandfathering were allowed, approximately 76 million pounds of additional US production (above a free market scenario) would be required, and the total US-origin supply required through 2000 would amount to about 266 million pounds. (Under free market conditions, US production is projected to total 190 million pounds $U_3O_8$ for the period 1989-2000). Lacking the grandfathering provision, only about 160 million pounds of additional imported material would be allowed into the USA. These various US production levels are shown in Figure 4.

In the event of a 75-percent restriction, with grandfathering allowed, approximately 110 million pounds of additional US production, above the free market case, would be required through 2000. Allowable imports would be limited to about 120 million pounds. Under this same level of restriction, but with no grandfathering, about 200 million pounds additional US production above the free market case would be required, and required US-origin production would total about 385 million pounds. Only about 42 million pounds of imports would be allowed.

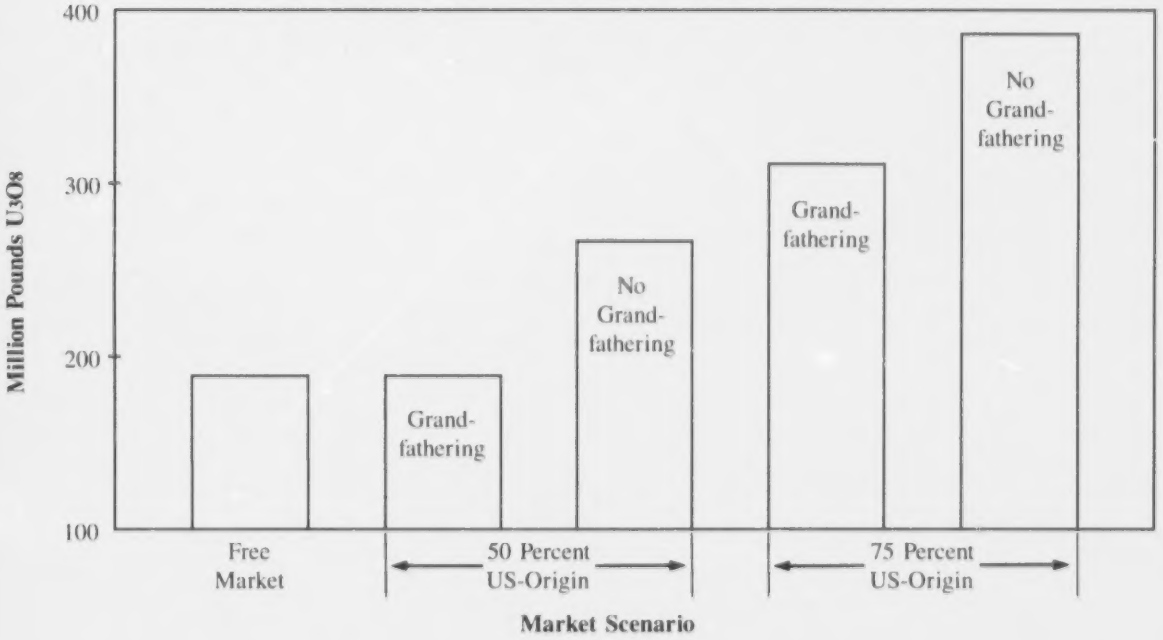
As can be seen from the annual production forecasts in Figure 5, the impact of the severe restriction, although major in terms of the US producing industry, is rather moderate on a worldwide basis.

**Conclusion**

This analysis of supply and demand assumes that, first, a total embargo on imports of non-US-origin uranium into the USA will be in effect from some time in mid-1987 through the end of 1988. It then assumes that legislative action or other compromise will reduce that level of import restriction from 100 percent to one of several hypothetical levels used for analysis, beginning in 1989.

**Figure 4**

**TOTAL US SUPPLY REQUIRED, 1989-2000**
**UNDER FREE MARKET AND RESTRICTED MARKET CONDITIONS**

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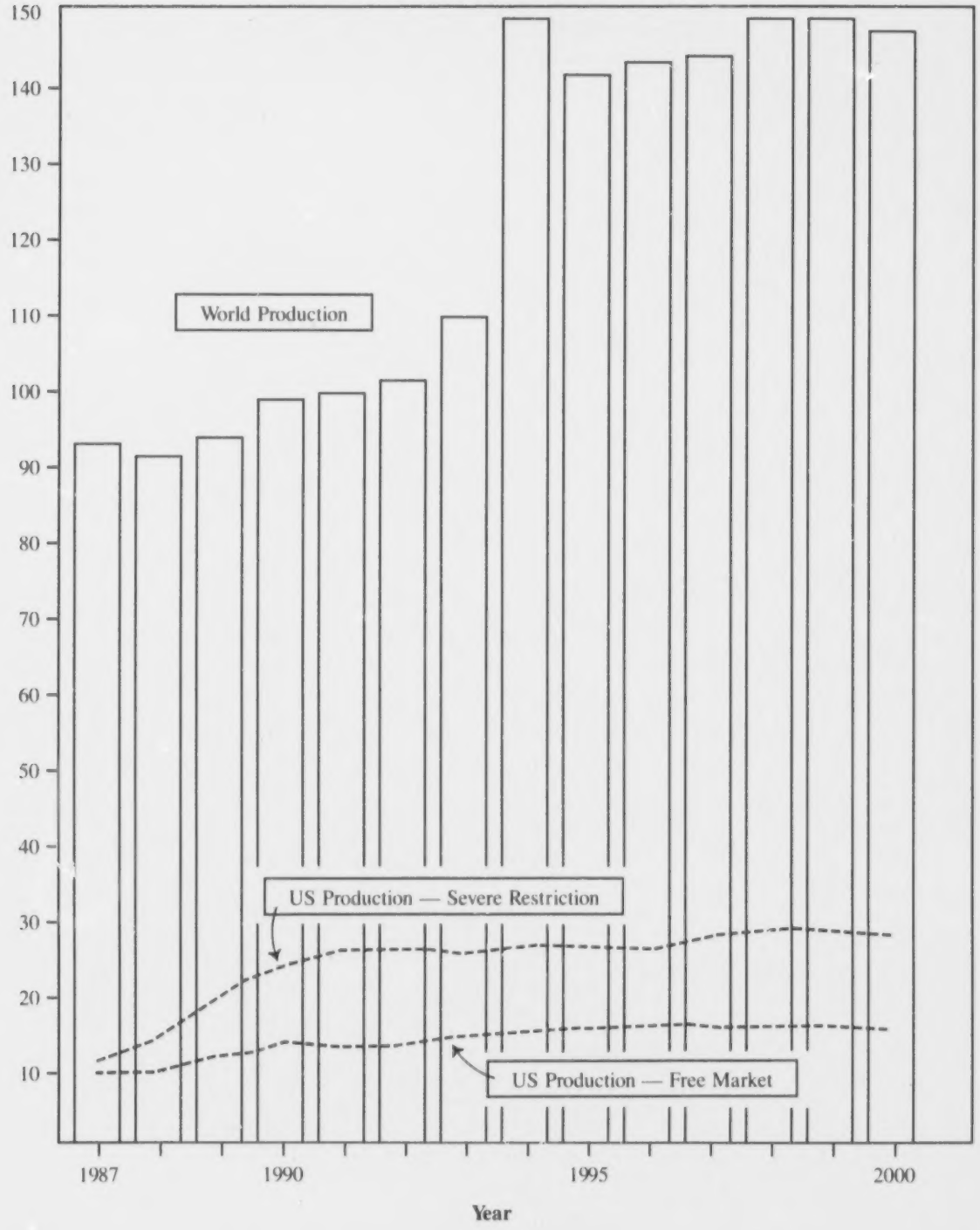
# NUEXCO

*ANALYSIS & COMMENTARY*

**Figure 5**

**WORLD AND US PRODUCTION FORECASTS**

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World excess inventory is forecast to diminish to zero by about 1993. Uncommitted uranium supply increases steadily through 2000, with increments above a free market condition for both moderate and severe US market restrictions.

Under several restricted market scenarios, US production shows an increasing degree of stimulation as the level of restriction is increased above 50 percent, and is additionally stimulated depending on whether grandfathering of existing contracts is denied under a given restriction level. No stimulation is projected for a 50-percent restriction with full grandfathering. However, a 75-percent restriction, with no grandfathering allowed, is projected to require almost 200 million pounds $U_3O_8$ additional US production by 2000, versus only about 120 million pounds with grandfathering allowed.

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*RECENT DEVELOPMENTS*

## AUSTRALIA

The Australian federal elections on July 11, 1987, resulted in the Australian Labour Party (ALP) being returned to power with a majority of 24 seats in the House of Representatives. The ALP also gained some seats in the Senate but will not have an absolute majority, leaving the Australian Democrats holding the balance of power, as was the case in the previous Parliament.

The ALP campaign was based on the premise that Australia had overcome the worst of its economic problems and that it would be unwise for the electorate to vote the ALP out of office before it had completed the task of restructuring Australia's economy. As major achievements during its term of office, the ALP emphasized the improved trends in the balance-of-payment deficit, reduced budget deficit, lower unemployment figures, and the success of the "income and prices accord" in moderating wage increases with less industrial discord.

The Liberal Party, the main opposition party, based its campaign largely on criticism of the government's economic policies (high interest rates, unemployment, high inflation and overseas debt) and proposed substantial reductions in personal income tax rates (a top rate of 38 percent versus the government's previously announced top marginal rate of 49 percent), as an inducement for people to work harder and thereby turn Australia's economic situation around. The tax cuts would be paid by reducing government expenditures by some 16 percent over a three-year period.

The ALP did not propose any new major policy initiatives outside the social welfare area during its campaign. However, the new Labour government has announced a substantial reorganization of the federal bureaucracy in Canberra (which the Liberals also proposed). The number of government departments is to be reduced from 28 to 17, while the number of ministers will be increased from 17 to 30, through the creation of a number of "junior ministers" (all elected politicians in accordance with the Westminster system), who will be responsible for specific areas of a cabinet minister's portfolio or will assist the latter over a range of functions. This is expected to trim the bureaucracy by some 3,000 employees (mainly through attrition) and lead to annual cost savings of about A$96 million.

In the reorganization of departments, the Department of Trade will virtually disappear and its functions relating to export services (including "Austrade") and the marketing of manufactured goods will be taken over by the existing Department of Industry, Technology and Commerce, which will also be responsible for nuclear science and technology.

Most of the remaining functions of the old Trade Department will be combined with Foreign Affairs to form the Department of Foreign Affairs and Trade. This Department will be responsible for external multilateral and bilateral relations and overseas information services.

The present Resources and Energy Department will be combined with the Primary Industries Department to form a new Department of Primary Industry and Energy. This will take over the present functions of the two existing departments, as well as commodity marketing, including the existing government administrative controls relating to uranium sales and exports previously handled by the Department of Trade.

Until the restructuring is complete, it will not be clear which department will have the prime responsibility for uranium export matters. There is no indication at present of any significant changes in the government's policies on uranium mine development and exports.

### Industrial Relations in the Australian Uranium Mining Industry

The current phase of Australia's uranium mining industry started with the re-opening of the Mary Kathleen Uranium Mine in North Queensland in the mid-1970s. Queensland Mines then commissioned its Nabarlek Mine in 1980, followed by Energy Resources of Australia's Ranger Mine in 1981. The latter mines are located in the Northern Territory.

The late 1970s to early 1980s was a period of intense activity by the anti-uranium movement, which had the support of several major trade unions involved in key areas such as rail transportation, shipping and stevedoring. This period was a difficult one for the mining companies which normally made their concentrate shipments through the ports of Brisbane and Darwin. Alternative transportation arrangements, such as air freighting, had to be made for some shipments to meet delivery commitments.

The principal trade union body, the Australian Council of Trade Unions (ACTU) is nominally opposed to the mining and export of uranium so long as perceived problems relating to non-proliferation and nuclear waste disposal remain unresolved. However, not all trade unions associated with the mining industry subscribe to the ACTU policy which, in any event, has adapted to the government's policy of limited uranium mine development.

Following the success of the ALP in the 1983 federal elections and the subsequent inquiry into the uranium industry by the Australian Science and Technology Council, the government decided that no new uranium mines would be permitted, apart from the Olympic Dam project in South Australia. Since the closure of the Mary Kathleen mine in 1982, and with the Nabarlek operations expected to cease

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next year, future uranium production in Australia will be limited to the one remaining Northern Territory producer and the new multi-mineral mine to be opened next year at Olympic Dam, unless present government policy is changed.

Since the present uranium policy was announced, the industry has settled down and anti-uranium activity is no longer considered a significant threat to scheduled uranium shipments. In early June, for example, what was probably the largest single shipment ever made by Energy Resources of Australia (ERA) moved unhindered through the port of Darwin.

Labor relations in the uranium mining industry should be viewed in the context of the broad industrial situation in the Australian economy as a whole, although the mining industry has its own special problems and circumstances, largely due to the remoteness of most mining sites and the less stable work forces often found in those areas.

Industrial disputes, as measured in terms of working days lost, have been greatly reduced since the ALP federal government assumed power in 1983. Introduction of the income and prices accord shortly thereafter has enabled the government to obtain the cooperation of the trade union movement in implementing its employment and anti-inflation policies. The accord has played a pivotal role in restraining wage and price increases during a period of considerable economic stress. Real unit labor costs have fallen by about seven percent and industrial disputes to less than half of the average recorded under the previous government. There has been a substantial drop in lost time during the 1983-86 period compared with, for example, the difficult 1979-81 period.

It has been thought for some time that the existing centralized system of wage indexation in Australia (the adjustment of wages and salaries in line with movements of the Consumer Price Index) is no longer appropriate in the present economic climate. Consequently, at the National Wage Case hearing in March 1987, the government decided to introduce a new two-tier wage system which would aim to ensure that:

1. Increases in nominal labor costs are reasonable and in line with the country's economic goals;

2. Efforts are made to increase efficiency and productivity at the industry and enterprise level; and

3. Protection is afforded to lower-paid workers.

In handing down its decision, the Australian Conciliation and Arbitration Commission decided to award a flat A$10 per week increase under the first tier, with the possibility of a further increase not exceeding a wage equivalent of 1.5 percent to be considered in October 1987. A four percent ceiling on wage and salary increases is provided under the second tier, which is aimed at achieving a consensus between the parties with respect to productivity and efficiency improvements, such as changed work and management practices and a reduction in demarcation barriers.

The introduction of the two-tier wage fixing system and other decisions made at the national wage case hearings will provide increased flexibility for future wage-fixing negotiations. Both unions and employers generally support the new system, which is expected to lead to further improvements in industrial relations and harmony throughout Australia. The uranium mining industry should benefit accordingly.

## SOUTH AFRICA

Second-quarter uranium output from Chamber of Mines producers totaled 2,555,000 pounds $U_3O_8$, a decline of 5.9 percent from the first quarter of 1987 (Table 2). Substantial drops in output from Buffelsfontein (a 10-percent drop), Freegold (an 11-percent drop), ERGO (a 10-percent drop) and Western Areas (an 18-percent drop) accounted for much of the overall decline. Of the other Chamber of Mines producers, only Driefontein Consolidated, Harmony and Stilfontein (Chemwes) avoided a decrease in production.

The fall in output at Randfontein and Western Areas was the result of lower tonnage treated due to strikes and labor disruptions. The decline at Buffelsfontein was caused by a more than 20 percent drop in yield. Freegold and Vaal Reefs both reported lower tonnages of ore treated in the second quarter.

As one example of the South African producers' view of the uranium market over the past year, Mr. E. P. Gush, President of the Chamber of Mines of South Africa, made the following remarks in his Presidential Address, delivered on June 23, 1987:

"The South African uranium producers faced an unusually difficult year, with the continued strong buyer's market coupled with the introduction of mandatory sanctions by the Legislature of the United States. The passing of the Comprehensive Anti-Apartheid Act of 1986 in July of that year imposed a prohibition on the importation of South African uranium oxide, $U_3O_8$, into the USA with effect from 31 December, 1986. A subsequent administrative ruling permitted, under certain conditions, the importation of South African uranium for processing and re-export for use by third parties. This interim United States Treasury Department ruling is effective until 1 July, 1987 to allow comment on the ruling and a decision on policy after that date.

"These actions represent the overt face of uranium sanctions. Also troublesome are the covert sanctions imposed

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without formal legal basis in other areas, notably in Japan and the European Community, which severely inhibit the contracting for new business. These restrictions have to date had no immediate adverse effect upon our existing long-term contracts, the traditional form of our business, nor have they noticeably affected new long-term business, which, irrespective of these artificial constraints, has not been forthcoming in the short term in any event in view of the current weak conditions prevailing in that market.

"It is therefore interesting to observe that during the year under review, uranium disposals increased, partly as a result of some long-term contract deliveries being brought forward. It is hoped that the restrictive political climate under which the South African uranium industry is currently forced to operate will gradually be ameliorated as substantive progress is made on the domestic political front. This development, coupled with early signs of a modest recovery in the uranium market could set the stage for the continued viability of the South African uranium industry in the late 1980s, early 1990s."

**Table 2**

**REPUBLIC OF SOUTH AFRICA**
**RECENT URANIUM PRODUCTION[1]**
**(Thousands of Pounds $U_3O_8$)**

| Operation | Third Quarter 1986 | Fourth Quarter 1986 | First Quarter 1987 | Second Quarter 1987 | Percent Change[2] |
|---|---|---|---|---|---|
| Buffelsfontein | 362 | 302 | 271 | 245 | −9.6 |
| Driefontein Consolidated | 46 | 43 | 41 | 41 | 0 |
| ERGO[3] | 79 | 86 | 88 | 79 | −10.2 |
| Freegold[4] | 279 | 266 | 275 | 245 | −10.9 |
| Harmony | 171 | 116 | 102 | 103 | +1.0 |
| Hartebeestfontein | 267 | 257 | 242 | 231 | −4.5 |
| Randfontein | 304 | 356 | 314 | 297 | −5.4 |
| Stilfontein (Chemwes) | 141 | 226 | 228 | 234 | +2.6 |
| Vaal Reefs | 1,107 | 997 | 1,025 | 977 | −4.7 |
| Western Areas | 150 | 133 | 127 | 104 | −18.1 |
| TOTAL[5] | 2,906 | 2,782 | 2,714 | 2,555 | −5.9 |

[1]Excludes Palabora Mining Company, which is not a member of the Chamber of Mines.
[2]Change in percent from the first quarter of 1987.
[3]ERGO = East Rand Gold and Uranium Company Ltd.
[4]Formerly Free State Joint Metallurgical Scheme
[5]Columns may not add due to rounding.

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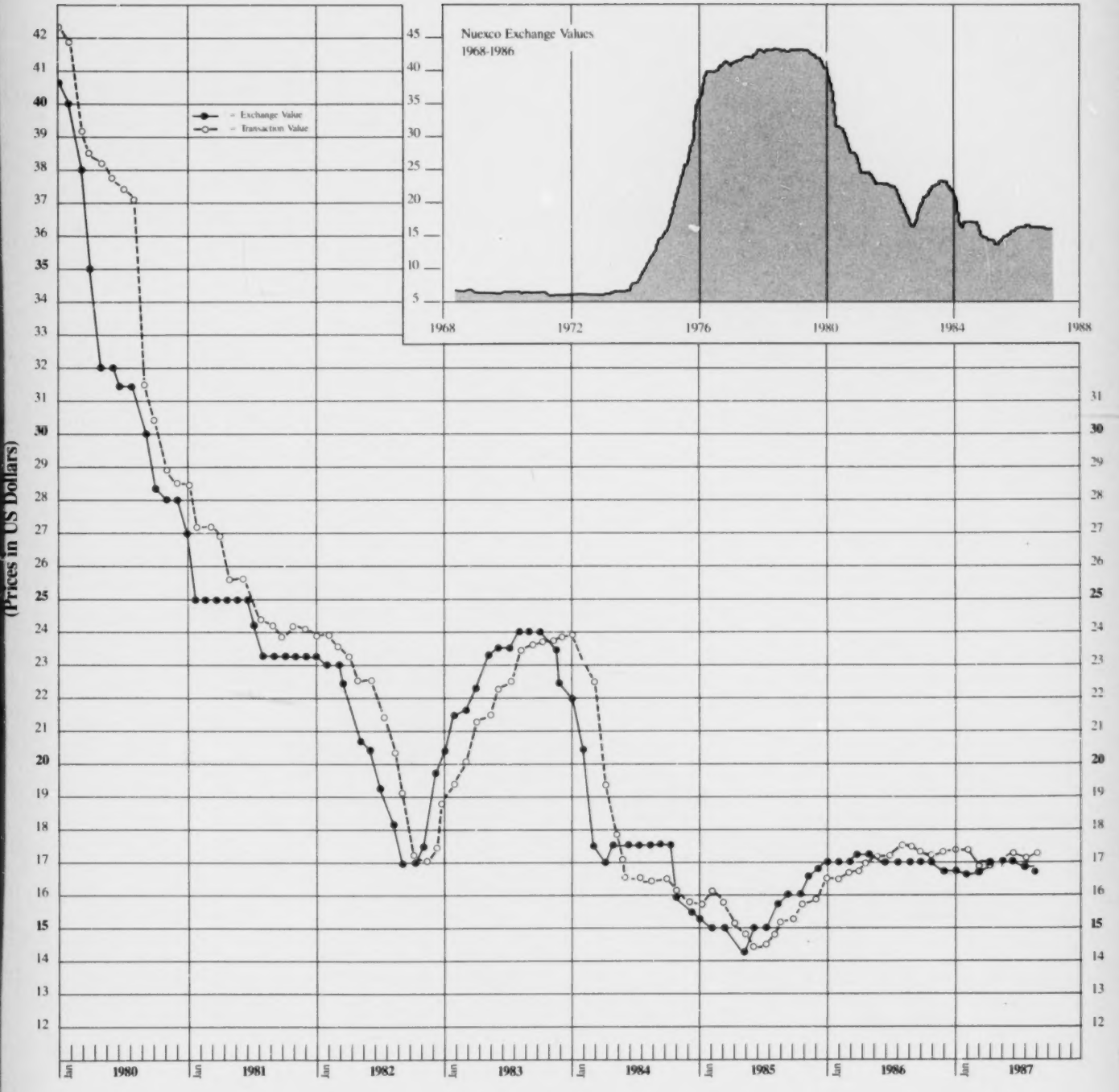
*HISTORICAL MARKET DATA*

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# NUEXCO

*HISTORICAL MARKET DATA*

## HISTORICAL EXCHANGE VALUES

Determined as of the last day of the month indicated (US Dollars/lb. $U_3O_8$)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1968 | — | — | — | — | — | — | — | 6.35 | 6.35 | 6.40 | 6.45 | 6.50 |
| 1969 | — | 6.35 | 6.10 | 6.10 | 6.25 | 6.25 | 6.20 | 6.20 | 6.15 | 6.15 | 6.15 | 6.20 |
| 1970 | 6.30 | 6.30 | 6.30 | 6.30 | 6.30 | 6.30 | 6.30 | 6.20 | 6.15 | 6.15 | 6.15 | 6.15 |
| 1971 | 6.20 | 6.20 | 6.20 | 6.20 | 6.15 | 6.05 | 6.00 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 |
| 1972 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 | 5.95 |
| 1973 | 5.95 | 6.00 | 6.10 | 6.20 | 6.45 | 6.50 | 6.50 | 6.50 | 6.50 | 6.50 | 6.75 | 7.00 |
| 1974 | 7.70 | 7.90 | 8.00 | 9.00 | 9.50 | 10.50 | 11.50 | 12.00 | 12.50 | 14.00 | 14.75 | 15.00 |
| 1975 | 16.00 | 16.00 | 18.00 | 20.00 | 21.00 | 23.00 | 24.70 | 26.00 | 26.00 | 28.50 | 30.00 | 35.00 |
| 1976 | 35.20 | 37.00 | 39.25 | 40.00 | 40.00 | 40.00 | 40.00 | 40.40 | 41.00 | 41.00 | 41.50 | 41.00 |
| 1977 | 41.35 | 41.50 | 41.60 | 41.60 | 42.00 | 42.25 | 42.25 | 42.25 | 42.40 | 42.75 | 43.20 | 43.20 |
| 1978 | 42.90 | 43.25 | 43.25 | 43.25 | 43.40 | 43.40 | 43.40 | 43.10 | 43.25 | 43.00 | 43.25 | 43.25 |
| 1979 | 43.25 | 43.25 | 43.25 | 43.25 | 43.25 | 43.00 | 42.70 | 42.70 | 42.20 | 42.20 | 41.00 | 40.75 |
| 1980 | 40.00 | 38.00 | 35.00 | 32.00 | 32.00 | 31.50 | 31.50 | 30.00 | 28.50 | 28.00 | 28.00 | 27.00 |
| 1981 | 25.00 | 25.00 | 25.00 | 25.00 | 25.00 | 24.25 | 23.50 | 23.50 | 23.50 | 23.50 | 23.50 | 23.50 |
| 1982 | 23.00 | 23.00 | 22.50 | 20.75 | 20.50 | 19.25 | 18.25 | 17.00 | 17.00 | 17.50 | 19.75 | 20.25 |
| 1983 | 21.50 | 21.75 | 22.25 | 23.25 | 23.50 | 23.50 | 24.00 | 24.00 | 24.00 | 23.50 | 22.50 | 22.00 |
| 1984 | 20.50 | 17.50 | 17.00 | 17.75 | 17.75 | 17.50 | 17.50 | 17.50 | 17.50 | 16.00 | 15.50 | 15.25 |
| 1985 | 15.00 | 15.00 | 15.00 | 14.25 | 15.00 | 15.00 | 15.75 | 16.00 | 16.00 | 16.50 | 16.75 | 17.00 |
| 1986 | 17.00 | 17.00 | 17.25 | 17.25 | 17.00 | 17.00 | 17.00 | 17.00 | 17.00 | 17.00 | 16.75 | 16.75 |
| 1987 | 16.65 | 16.75 | 17.00 | 17.00 | 17.00 | 16.90 | **16.75** | | | | | |

## HISTORICAL TRANSACTION VALUES

Determined as of the last day of the month indicated (US Dollars/lb. $U_3O_8$)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1976 | — | — | — | — | 39.60 | 39.70 | 39.70 | 40.40 | 40.30 | 40.60 | 40.70 | 40.70 |
| 1977 | 41.30 | 41.30 | 41.40 | 41.50 | 42.80 | 42.90 | 43.00 | 42.60 | 42.50 | 42.80 | 42.90 | 42.90 |
| 1978 | 43.10 | 43.30 | 43.70 | 43.60 | 43.60 | 43.20 | 43.30 | 43.40 | 43.40 | 43.60 | 43.40 | 43.70 |
| 1979 | 43.60 | 43.80 | 43.70 | 43.40 | 43.60 | 43.70 | 43.70 | 43.60 | 43.60 | 43.60 | 43.50 | 42.30 |
| 1980 | 42.00 | 39.30 | 38.60 | 38.40 | 37.90 | 37.60 | 37.30 | 31.60 | 30.60 | 29.00 | 28.70 | 27.70 |
| 1981 | 27.20 | 27.20 | 27.00 | 25.70 | 25.70 | 24.50 | 24.40 | 24.30 | 23.90 | 24.10 | 24.10 | 24.00 |
| 1982 | 24.00 | 23.70 | 23.40 | 22.60 | 22.70 | 21.50 | 20.30 | 19.10 | 17.30 | 17.00 | 17.55 | 18.80 |
| 1983 | 19.35 | 20.00 | 21.35 | 21.40 | 22.35 | 22.45 | 23.50 | 23.60 | 23.65 | 23.65 | 23.85 | 23.85 |
| 1984 | 23.05 | 22.50 | 19.25 | 17.90 | 17.00 | 16.50 | 16.60 | 16.40 | 16.55 | 16.05 | 15.90 | 15.90 |
| 1985 | 16.20 | 15.70 | 15.05 | 14.90 | 14.45 | 14.60 | 14.75 | 15.10 | 15.10 | 15.75 | 15.80 | 16.55 |
| 1986 | 16.55 | 16.70 | 16.70 | 17.10 | 17.15 | 17.20 | 17.50 | 17.45 | 17.35 | 17.25 | 17.30 | 17.35 |
| 1987 | 17.35 | 16.90 | 16.95 | 17.00 | 17.20 | 17.10 | **17.30** | | | | | |

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## HISTORICAL CONVERSION VALUES

Determined as of the last day of the month indicated (US Dollars/lb. U in $UF_6$)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1981 | 1.20 | 1.20 | 1.20 | 1.40 | 1.15 | 1.15 | 1.15 | 1.10 | 1.10 | 1.10 | 1.20 | 1.20 |
| 1982 | 1.20 | 1.20 | 1.20 | 1.20 | 1.00 | 1.00 | 1.00 | 0.90 | 1.10 | 1.60 | 1.45 | 1.45 |
| 1983 | 1.20 | 1.40 | 1.40 | 1.20 | 1.20 | 1.20 | 1.10 | 1.10 | 1.00 | 0.60 | 0.60 | 0.60 |
| 1984 | 0.60 | 0.30 | 0.80 | 0.80 | 0.80 | 0.00 | 0.00 | 0.80 | 1.00 | 1.00 | 0.80 | 0.80 |
| 1985 | 1.00 | 1.00 | 1.00 | 1.50 | 1.50 | 1.60 | 1.60 | 1.60 | 1.60 | 1.60 | 1.60 | 1.60 |
| 1986 | 1.60 | 1.80 | 1.80 | 1.90 | 1.80 | 1.80 | 1.80 | 1.90 | 1.90 | 1.90 | 1.80 | 1.80 |
| 1987 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | **1.90** | | | | | |

## HISTORICAL $UF_6$ VALUES

Determined as of the last day of the month indicated (US Dollars/kg. U in $UF_6$)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1985 | — | — | — | 40.50 | 42.50 | 42.50 | 44.00 | 44.50 | 44.50 | 46.00 | 46.00 | 47.00 |
| 1986 | 47.00 | 48.00 | 48.00 | 48.50 | 48.25 | 48.25 | 48.25 | 48.00 | 48.00 | 48.00 | 48.00 | 47.75 |
| 1987 | 47.75 | 48.00 | 48.00 | 48.00 | 47.75 | 47.75 | **47.50** | | | | | |

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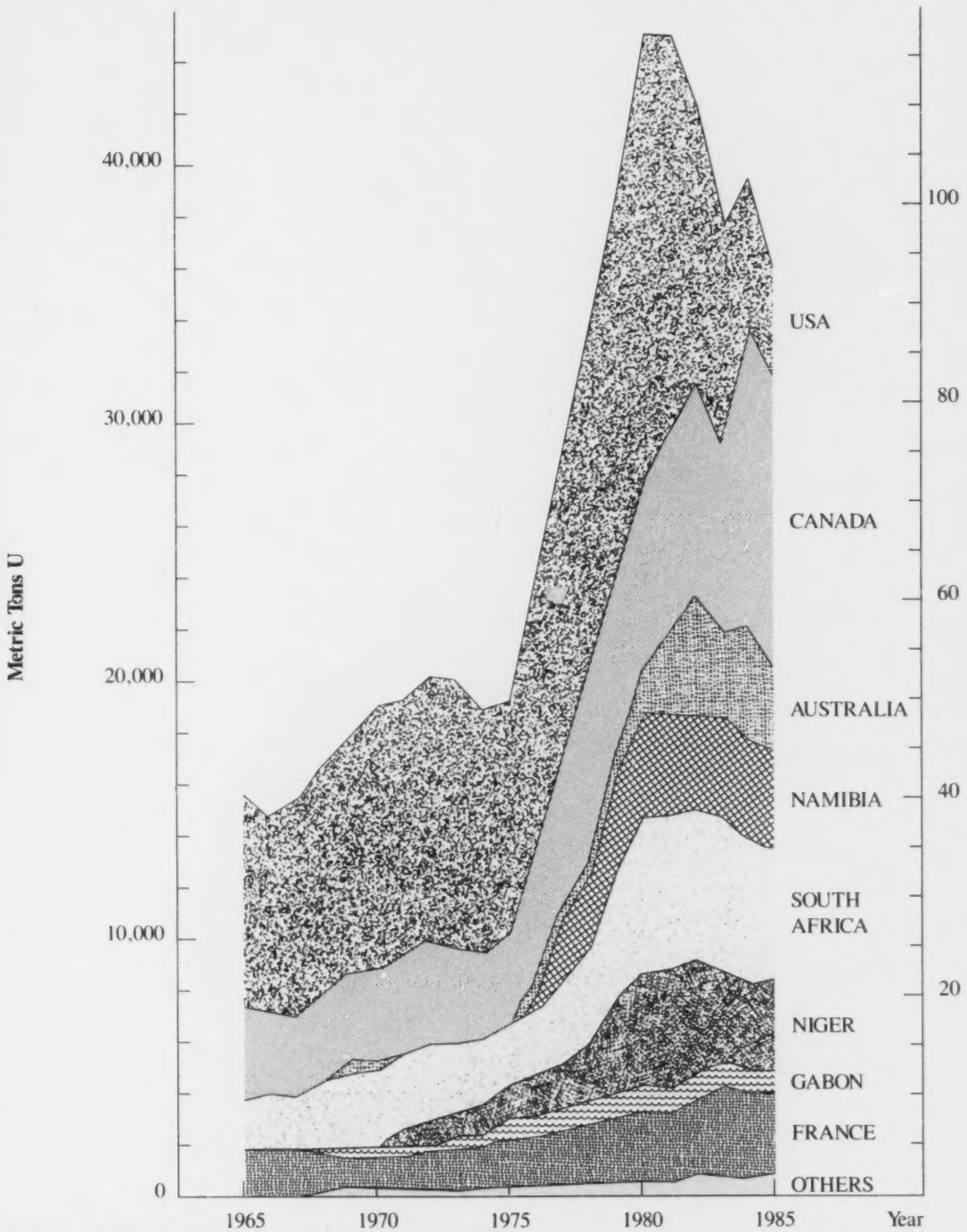
# NUEXCO

*HISTORICAL MARKET DATA*

## HISTORICAL WOCA[1] URANIUM PRODUCTION[2]
**(Compiled by OECD/IAEA Joint Report[3])**




[1]WOCA = World Outside of Centrally-planned Economic Areas.

[2]1985 production data are preliminary.

[3]A joint report issued biennially by the OECD Nuclear Energy Agency and the International Atomic Energy Agency.

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## US URANIUM MARKETING ACTIVITIES STATISTICS[1]
### (Compiled from data published by the US Energy Information Administration)

| Year | Total Production[2] (million pounds $U_3O_8$) | Deliveries to Domestic Utilities[3] (million pounds $U_3O_8$) | Average Price of Delivered Uranium ($/lb. $U_3O_8$) | Quantity of Uranium Imported[4] (million pounds $U_3O_8$) | Average Price of Imported Uranium ($/lb. $U_3O_8$) | Quantity of Uranium Exported (million pounds $U_3O_8$) |
|---|---|---|---|---|---|---|
| 1976 | 25.5 | n/a | n/a | 3.6 | n/a | 1.2 |
| 1977 | 29.9 | n/a | n/a | 5.6 | n/a | 4.0 |
| 1978 | 37.0 | n/a | n/a | 5.2 | n/a | 6.8 |
| 1979 | 37.5 | 33.0[5] | $23.85[5] | 3.0 | n/a | 6.2 |
| 1980 | 43.7 | 35.0[5] | $28.15[5] | 3.6 | $43.10 | 5.8 |
| 1981 | 38.5 | 32.6[5] | $34.65[5] | 6.6 | $32.90 | 4.4 |
| 1982 | 26.9 | 27.1 | $38.37 | 17.1 | $27.23[6] | 6.2 |
| 1983 | 21.2 | 24.2 | $38.21 | 8.2 | $26.16 | 3.3 |
| 1984 | 14.9 | 22.5 | $32.65 | 12.5 | $21.86 | 2.2 |
| 1985 | 11.3 | 21.7 | $31.43 | 11.7 | $20.08 | 5.3 |

[1]Sources: 1979: US Department of Energy, Assistant Secretary for Resource Applications, Office of Uranium Resources and Enrichment, *Survey of United States Uranium Marketing Activity*, DOE/RA-0053 (Washington DC, July 1980). 1980-1981: US Department of Energy, Assistant Secretary for Nuclear Energy, Office of Uranium Enrichment and Assessment, *Survey of United States Uranium Marketing Activity*, DOE/NE-0013 and DOE/NE-0013/1 (Washington DC, June 1981 and July 1982). 1982: Energy Information Administration, *1982 Survey of United States Uranium Marketing Activity*, DOE/EIA-0403 (Washington DC, September 1983). 1983: Energy Information Administration, *Survey of United States Uranium Marketing Activity 1983*, DOE/EIA-0403(83) (Washington DC, August 1984). 1984: Energy Information Administration, Form EIA-858, "Uranium Industry Annual Survey" (1984). 1985: Energy Information Administration, Form EIA-858, "Uranium Industry Annual Survey" (1985).

[2]Sources: 1976-1982: US Department of Energy, Grand Junction Area Office, *Statistical Data of the Uranium Industry*, GJO-100 (Grand Junction, Colorado, January 1983). 1983: Calculated by the staff of the Nuclear and Alternate Fuels Division, Office of Coal, Nuclear, Electric and Alternate Fuels, Energy Information Administration, from US Department of Energy, Grand Junction Area Office data files. 1984: Energy Information Administration, Form EIA-858, "Uranium Industry Annual Survey" (1984). 1985: Energy Information Administration, Form EIA-858, "Uranium Industry Annual Survey" (1985).

[3]Excludes direct imports by domestic utilities.

[4]Includes imports by domestic utilities and domestic suppliers.

[5]Includes delivery commitments to domestic utilities and agents.

[6]Computation of quantity-weighted average price excludes the quantity associated with a large exchange (swap) transaction that occurred in 1982.

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# NUEXCO

*HISTORICAL MARKET DATA*

## VOLUME AND PRICE OF URANIUM DELIVERIES TO THE EUROPEAN COMMUNITY[1]
**(Compiled from data published by the Euratom Supply Agency)**

| Year | Volume of Deliveries to the EC[2] (in MTU) | Percentage of Deliveries Made Under Spot Contracts | Medium or Long-Term Contracts[3,4] | | Spot Contracts[3,4] | |
|---|---|---|---|---|---|---|
| | | | Average Price in ECU per pound $U_3O_8$ | Average Price in US Dollars per pound $U_3O_8$ | Average Price in ECU per pound $U_3O_8$ | Average Price in US Dollars per pound $U_3O_8$ |
| 1977 | n/a | n/a | n/a | n/a | n/a | $41.00 |
| 1978 | n/a | n/a | n/a | n/a | n/a | $43.00 |
| 1979 | 10,000 | n/a | n/a | n/a | n/a | $44.50 |
| 1980 | 8,600 | n/a | n/a | $36.00 | n/a | $35.00 |
| 1981 | 13,000 | less than 10 | n/a | $33.25 | n/a | $28.00 |
| 1982 | 12,500 | less than 10 | ECU 32.25 | $32.00 | ECU 24.25 | $24.00 |
| 1983 | 13,500 | less than 10 | ECU 34.75 | $31.00 | ECU 26.00 | $23.25 |
| 1984 | 11,000 | less than 10 | ECU 37.75 | $29.75 | ECU 24.50 | $19.25 |
| 1985 | 11,000 | 11.5 | ECU 38.00 | $29.00 | ECU 19.50 | $15.00 |

[1]The twelve European Community member nations are Belgium, Denmark, France, the Federal Republic of Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and the United Kingdom; prior to January 1986, Spain and Portugal were not members of the EC.

[2]The only deliveries taken into account are those made to final users, namely the electric utilities or their procurement organizations; deliveries to middlemen or fuel cycle companies are not included. The sales between utilities in the Community are also excluded. The quantities covered are those which were entered into accounting records during the year stated.

[3]For deliveries made under medium or long-term contracts (i.e., for which the time between the date of signature and the date of the last delivery exceeds one year) the prices were expressed in seven different currencies. In order to calculate an average price, these prices have been converted into European Currency Units (ECU) and US dollars. The average prices were weighted by quantity and converted on the basis of the average annual exchange rate of the different currencies against the ECU and US dollar.

[4]Exchange rates as published by European Communities Statistical Office and the International Monetary Fund.

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## AUSTRALIA

| | Consumer Price Index[1] | Price Index of Materials Used in Manufacturing Industry — All Groups[2] | Award Rates of Pay Indexes Australia — Adult Males In Mining Wage Earners, Weekly Rates[3] (1976 = 100) |
|---|---|---|---|
| 1975 Avg. | 57.9 | 150.4 | 132.6 |
| 1976 Avg. | 65.7 | 168.4 | 160.9 |
| 1977 Avg. | 73.8 | 192.0 | 179.0 |
| 1978 Avg.[4,5] | 79.7 | 198.5 | 190.0 |
| 1979 Avg. | 86.9 | 248.8 | 127.9 |
| 1980 Avg. | 95.8 | 321.8 | 140.8 |
| 1981 Avg. | 105.0 | 355.3 | 154.1 |
| 1982 Avg.[6] | 116.7 | 368.6 | 174.9 |
| 1983 Avg. | 128.5 | 401.6 | 181.8 |
| 1984 Avg. | 133.6 | 95.3 | 194.1 |
| 1985 Ave. | 142.6 | 100.0[4] | 203.2 |
| 1986 Avg. | 155.5 | 104.9[4]R | 213.7 |
| Jan 1986 | — | 109.5R | 211.2 |
| Feb 1986 | — | 108.7 | 211.2 |
| Mar 1986 | 150.5 | 99.4R | 211.2 |
| Apr 1986 | — | 94.2R | 211.2 |
| May 1986 | — | 93.5 | 211.2 |
| Jun 1986 | 153.0 | 95.6R | 211.2 |
| Jul 1986 | — | 97.9R | 216.0 |
| Aug 1986 | — | 98.1R | 216.0 |
| Sep 1986 | 157.0 | 105.5R | 216.0 |
| Oct 1986 | — | 106.0R | 216.1 |
| Nov 1986 | — | 105.0R | 216.3 |
| Dec 1986 | 161.5 | 105.4R | 216.2 |
| Jan 1987 | — | 106.3R | 216.2 |
| Feb 1987 | — | 109.1R | 216.5 |
| Mar 1987 | 164.7 | 108.5P | 217.0 |
| Apr 1987 | — | 108.4P | — |

P = Preliminary R = Revised since last month

[1]Weighted average of six State capital cities (1975 to 1980), and eight capital cities from 1981 (Base: year 1980-81 = 100.0).

[2]Australian Bureau of Statistics, Canberra: "Price Index of Materials Used in Manufacturing Industry" (Catalogue No. 6411.0). The basis of this index is 1968/1069 = 100 for years 1975-1983, and 1984/1985 = 100 for all subsequent data.

[3]Australian Bureau of Statistics, Canberra: "Award Rates of Pay Indexes, Australia" (Catalogue No. 6312.0). Basis is 1975 = 100 for years 1975-1978, and 1976 = 100 for all subsequent data.

[4]Annual averages are for financial year ending June 30.

[5]Monthly data for 1970-78 appear on pages 4.7 and 4.8 of Report 138.

[6]Monthly data for 1979-82 appear on page 35 of Report 184.

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# NUEXCO

*GOVERNMENT STATISTICS*

## CANADA

| | Industry Selling Price Index: All Commodities[1] (1981 = 100) | Wage-earner Data: Average Hourly Earnings (C$)[2] Uranium Mines (SIC 057) | Metal Mines (SIC 051-059) | Mines, Quarries and Oil Wells[3] (SIC 051-099) | Primary Non-ferrous Metal Industries[4] (SIC 296) | (SIC 298) | Chemicals and Chemical Products[5] (SIC 372-379) |
|---|---|---|---|---|---|---|---|
| 1979 Avg.[6] | 217.9 | — | 9.60 | 9.66 | — | — | 7.67 |
| 1980 Avg. | 247.2 | — | 10.58 | 10.80 | — | — | 8.50 |
| 1981 Avg. | 288.7 | — | 12.02 | 12.23 | — | — | 9.53 |
| 1982 Avg.[7] | 288.8 | — | 13.74 | 13.92 | — | — | 10.63 |
| 1983 Avg. | 298.8 | — | — | 14.30 | — | — | 11.17 |
| 1984 Avg. | 310.9 | 17.88 | — | 15.07 | 12.28 | 10.49 | 11.76 |
| Jan 1985 | 117.5 | 18.05 | 16.13 | 15.60 | 12.32 | 10.80 | 12.04 |
| Feb 1985 | 117.7 | 18.78 | 16.41 | 15.68 | 12.52 | 11.05 | 12.06 |
| Mar 1985 | 118.4 | 18.24 | 16.21 | 15.57 | 12.44 | 10.97 | 12.02 |
| Apr 1985 | 118.3 | 18.63 | 16.44 | 15.80 | 12.81 | 11.23 | 12.04 |
| May 1985 | 118.6 | 19.41 | 16.51 | 15.63 | 12.76 | 11.25 | 12.15 |
| Jun 1985 | 118.6 | 18.49 | 16.20 | 15.49 | 12.89 | 11.14 | 12.14 |
| Jul 1985 | 118.6 | 18.14 | 16.27 | 15.41 | 12.96 | 11.17 | 12.13 |
| Aug 1985 | 118.4 | 17.07 | 16.03 | 15.30 | 12.97 | 11.31 | 12.19 |
| Sep 1985 | 118.6 | 18.53 | 16.55 | 15.72 | 12.95 | 11.39 | 12.26 |
| Oct 1985 | 119.0 | 18.74 | 16.51 | 15.70 | 13.14 | 11.53 | 12.33 |
| Nov 1985 | 119.3 | 19.05 | 16.66 | 15.88 | 12.76 | 11.32 | 12.49 |
| Dec 1985 | 120.0 | 19.07 | 16.57 | 16.01 | 12.51 | 11.09 | 12.59 |
| Jan 1986 | 121.0 | 18.15 | 16.22 | 15.86 | 13.11 | 11.48 | 12.52 |
| Feb 1986 | 120.8 | 19.52 | 16.57 | 15.99 | 13.20 | 11.59 | 12.45 |
| Mar 1986 | 120.1 | 19.04 | 16.65 | 15.93 | 13.11 | 11.59 | 12.54 |
| Apr 1986 | 119.3 | 19.38 | 16.68 | 15.95 | 13.07 | 11.64 | 12.54 |
| May 1986 | 118.4 | 19.54 | 16.68 | 15.78 | 13.16 | 11.72 | 12.51 |
| Jun 1986 | 118.6 | 19.80 | 16.63 | 15.64 | 13.44 | 11.86 | 12.49 |
| Jul 1986 | 118.8 | 19.51 | 16.34 | 15.48 | 13.28 | 11.73 | 12.52 |
| Aug 1986 | 119.1 | 18.39 | 16.17 | 15.46 | 13.31 | 11.31 | 12.70 |
| Sep 1986 | 119.4 | 19.32 | 16.62 | 15.78 | 13.14 | 11.45 | 12.90 |
| Oct 1986 | 119.9 | 19.97 | 16.81 | 16.11 | 13.30 | 11.59 | 12.94 |
| Nov 1986 | 119.9 | 20.11 | 17.01 | 16.24 | 13.42 | 11.66 | 12.93 |
| Dec 1986 | 119.7 | 19.67 | 16.79 | 16.19 | 13.06 | 11.57 | 12.99 |
| Jan 1987 | 120.0 | 19.53R | 16.93R | 16.01R | 13.06 | 12.58R | 12.89R |
| Feb 1987 | 119.8 | 20.33 | 17.20R | 16.21R | 13.01 | 12.66 | 13.11R |
| Mar 1987 | 120.3 | 20.04 | 17.14R | 16.15R | 13.57 | 12.58 | 13.02R |
| Apr 1987 | 121.1 | 20.47 | 17.38R | 16.26R | 13.75R | 11.99R | 13.27R |
| May 1987 | 121.7P | 20.50P | 17.30P | 16.13P | 14.18P | 11.96P | 13.32P |

P = Preliminary R = Revised since last month

[1]Statistics Canada, Prices Division, Ottawa: "Industry Price Indexes" (Catalogue 62-011). Indexes for the most recent six months shown are subject to revision. This category was formerly known as "Manufacturing." Index prior to 1985, 1971 = 100.

[2]Statistics Canada, Labour Division, Employment and Payrolls Section, Ottawa: "Employment, Earnings and Hours" (Catalogue 72-002).

[3]Reports 175 through 185 list this series title incorrectly as "Metal Mining, Including Milling (SIC 050-099)."

[4]Beginning with the April 1983 figure, Primary Metal Industries, non-ferrous is split into SIC 296 and SIC 298.

[5]Chemical and Chemical Products prior to April 1983 was SIC 370-379. The new series is from a new survey which includes all companies and is based on a 1970 classification. The old survey only included companies of 20 employees or more.

[6]Monthly ISPI for 1977 and 1978 appear on page 4.10 of Report 138, and monthly wage-earner data for 1973-78 appear on page 4.11 of Report 138.

[7]Monthly data for 1979-1982 appear on page 37 of Report 184. On that page, the wage earner index entitled "Metal Mining, Including Milling (SIC 050-099)" should read "Total Mining (SIC 051-099)."

[8]Beginning with the March 1983 figure, Wage Earner Data are based on a census of all companies employing 200 or more wage earners, *plus* a random survey of companies employing fewer than 200 wage earners. Prior to March 1983 only companies employing 200 or more wage earners are included in the Wage Earner Data.

## REPUBLIC OF SOUTH AFRICA

| | | Average Declared Working Costs per Metric Ton of Gold Ore Milled (Rand)[1] | Tonnage-Weighted Index of Average Working Costs per Metric Ton of Gold Ore Milled (March 1982 = 100)[2] | Consumer Price Index[3] (1980 = 100)[4] | Producer Price Index All Groups[5] (1980 = 100) | Total Employment in Mining and Quarrying (Code 35)[6] | Total Salaries and Wages in Mining and Quarrying (1,000 Rand) (Code 40)[6] |
|---|---|---|---|---|---|---|---|
| 1975 | Avg. | 16.71 | — | 157.2 | 100.0 | 639,473 | 1,003,617 |
| 1976 | Avg. | 19.30 | — | 174.7 | 115.1 | 671,240 | 1,212,983 |
| 1977 | Avg. | 23.87 | — | 194.4 | 130.0 | 712,006 | 1,420,670 |
| 1978 | Avg. | 27.14 | — | 137.2 | 142.7 | 664,571 | 1,537,169 |
| 1979 | Avg.[7] | 30.18 | — | 155.3 | 164.5 | 692,209 | 1,830,632 |
| 1980 | Avg.[8] | 35.53 | — | 176.7 | 192.1 | 714,379 | 2,279,615 |
| 1981 | Avg. | 41.89 | — | 206.5 | 218.3 | 728,506 | 2,820,505 |
| 1982 | Avg.[9] | 47.25 | 104.2 | 233.5 | 248.7 | 707,552 | 3,246,071 |
| 1983 | Avg. | 51.88 | 115.0 | 262.2 | 274.8 | 696,579 | 3,644,772 |
| 1984 | Avg. | 58.95 | 130.3 | 292.8 | 297.9 | 712,080 | 4,196,764 |
| 1985 | Avg. | 68.76 | 151.68 | 192.6 | 181.2 | 726,804 | 396,956 |
| Jan | 1986 | — | — | 213.8 | 203.6 | 744,070 | 449,513 |
| Feb | 1986 | — | — | 215.8 | 206.9 | 754,458 | 438,562 |
| Mar | 1986 | 75.76 | 167.8 | 218.3 | 206.9 | 759,897 | 445,387 |
| Apr | 1986 | — | — | 222.2 | 208.9 | 756,388 | 437,563 |
| May | 1986 | — | — | 222.6 | 212.5 | 754,788 | 425,544 |
| Jun | 1986 | 77.65 | 172.0 | 224.4 | 213.3 | 756,637 | 462,365 |
| Jul | 1986 | — | — | 228.8 | 216.3 | 756,140 | 516,832 |
| Aug | 1986 | — | — | 232.2 | 220.3 | 760,929 | 502,968 |
| Sep | 1986 | 81.94 | 181.8 | 236.7 | 221.9 | 765,772 | 511,363 |
| Oct | 1986 | — | — | 239.3 | 226.8 | 763,953 | 512,897 |
| Nov | 1986 | — | — | 242.4 | 230.2 | 761,325 | 531,509 |
| Dec | 1986 | 85.38 | 189.9 | 244.9 | 232.1 | 752,264 | 536,970 |
| Jan | 1987 | — | — | 248.3 | 233.9 | 740,031 | 532,577 |
| Feb | 1987 | — | — | 251.0 | 237.0 | 741,032 | 585,461 |
| Mar | 1987 | 88.17 | 197.1 | 255.0 | 239.6 | — | — |
| Apr | 1987 | — | — | 258.2 | 242.5 | — | — |
| May | 1987 | — | — | 261.2 | 243.6 | — | — |
| Jun | 1987 | — | — | 263.1 | — | — | — |

P = Preliminary  R = Revised since last month

[1]Chamber of Mines of South Africa, Johannesburg; "Analysis of Working Results," published quarterly.

[2]Page 16 of Report 178 contains description and calculation of index, and page 24 of Report 178 lists figures for 1982.

[3]Republic of South Africa Department of Statistics, Pretoria; "Government Gazette: Consumer Price Index for Urban Areas."

[4]The basis for calculation prior to January 1985, 1975 = 100. For annual averages prior to 1978, April 1970 = 100.

[5]Previously known as the Wholesale Price Index, now the Producer Price Index. The computation remains the same. The basis for calculation prior to January 1985, 1975 = 100.

[6]Bulletin of Statistics, Department of Statistics, Pretoria.

[7]Historical data for the Average Declared Working Costs and Consumer Price Index 1970-1979 appear on page 4.9 of Report 140.

[8]Monthly data for Codes 35 and 40, 1977-1980, appear on page 28 of Report 157.

[9]Monthly data for 1979-82 appear on page 39 of Report 184.

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# NUEXCO

*GOVERNMENT STATISTICS*

## UNITED STATES

| | Producer Price Index[1] | | Consumer Price Index[2] | GNP Implicit Price Deflator[3,4] | Gross Average Hourly Earnings of Production or Non-supervisory Workers (US$)[5] | | | |
|---|---|---|---|---|---|---|---|---|
| | Industrial Commodities (1967 = 100) | All Commodities (1967 = 100) | (1967 = 100) | (1982 = 100) | Metal Mining (SIC 10) | Primary Non-ferrous Metals (SIC 333) | Chemicals and Allied Products (SIC 28) | Electric and Electronic Equipment (SIC 36) |
| 1980 Avg.[6] | 274.8 | 268.8 | 246.8 | 178.64 | 10.26 | 10.63 | 8.30 | 6.94 |
| 1981 Avg. | 304.1 | 293.4 | 272.4 | 195.51 | 11.55 | 11.98 | 9.12 | 7.62 |
| 1982 Avg.[7] | 312.3 | 299.3 | 289.1 | 207.15 | 12.33 | 12.94 | 9.96 | 8.21 |
| 1983 Avg. | 315.8 | 303.1 | 298.4 | 215.63 | 12.57 | 13.43 | 10.59 | 8.65 |
| 1984 Avg. | 322.6 | 310.3 | 311.1 | 108.1 | 13.05 | 13.43 | 11.08 | 9.04 |
| 1985 Avg. | 323.9 | 308.8 | 322.2 | 111.7 | 13.39 | 13.75 | 11.56 | 9.47 |
| Jan 1986 | 323.8 | 308.9 | 328.4 | — | 13.41R | 13.68R | 11.87R | 9.58R |
| Feb 1986 | 318.9 | 304.4 | 327.5 | — | 13.46R | 13.80R | 11.83R | 9.57R |
| Mar 1986 | 314.0 | 300.3 | 326.0 | 113.5 | 13.41R | 13.91R | 11.80R | 9.60R |
| Apr 1986 | 311.6 | 298.2 | 325.3 | — | 13.47R | 13.89R | 11.84R | 9.60R |
| May 1986 | 311.6 | 299.2 | 326.3 | — | 13.40R | 13.79 | 11.90R | 9.63R |
| Jun 1986 | 311.8 | 299.0 | 327.9 | 114.2 | 13.50R | 13.50R | 11.95R | 9.59R |
| Jul 1986 | 308.5 | 297.4 | 328.0 | — | 13.33R | 13.30R | 12.05R | 9.67R |
| Aug 1986 | 307.9 | 297.2 | 328.6 | — | 12.96R | 13.13R | 11.99 | 9.64R |
| Sep 1986 | 308.7 | 297.5 | 330.2 | 115.0 | 13.04R | 13.28R | 12.03 | 9.70R |
| Oct 1986 | 309.6 | 298.4 | 330.5 | — | 12.85R | 13.16R | 12.08 | 9.67R |
| Nov 1986 | 309.8 | 298.7 | 330.8 | — | 12.75R | 13.14R | 12.17R | 9.73R |
| Dec 1986 | 309.3 | 298.1 | 331.1 | 115.3 | 12.70 | 13.03R | 12.20 | 9.82R |
| Jan 1987 | 313.6 | 300.9 | 333.1 | — | 12.94R | 12.98R | 12.18R | 9.84R |
| Feb 1987 | 314.9R | 302.2R | 334.4 | — | 12.99R | 12.83R | 12.21R | 9.84R |
| Mar 1987 | 315.8 | 302.8 | 335.9 | 116.2 | 13.04R | 12.79R | 12.24R | 9.84R |
| Apr 1987 | 317.4 | 305.1 | 337.7 | — | 13.16R | 12.90R | 12.30R | 9.82R |
| May 1987 | 318.6 | 307.3 | 338.7 | — | 13.00P | 12.92P | 12.30R | 9.83R |
| Jun 1987 | 320.2 | 308.5 | 340.1 | 117.2 | — | — | 12.24P | 9.82P |

P = Preliminary R = Revised since last month

[1]US Bureau of Labor Statistics, Washington, D.C.: "Producer Prices and Price Indexes," (formerly "Wholesale Prices and Price Indexes"). Producer Price Indexes are revised four months after they are first released to reflect the availability of late reports and corrections by respondents.

[2]US Bureau of Labor Statistics, Washington, D.C.: Consumer Price Index for All Urban Consumers, US City Average, All Items.

[3]US Department of Commerce, Washington, D.C.: Bureau of Economic Analysis, National Income and Wealth Division: "Survey of Current Business." The GNP Implicit Price Deflator is published quarterly, and seasonally adjusted.

[4]The basis for calculation of this index was revised to 1982 = 100. 1984 and 1985 figures have been adjusted to that basis. The basis for calculation prior to 1984, 1972 = 100.

[5]US Bureau of Labor Statistics, Washington, D.C.: "Employment and Earnings." All data based on 1972 revision of SIC Manual. Data for 1970-1976 are adjusted to the March 1977 benchmark. Data for 1977-1978 are adjusted to the March 1979 benchmark. Data for January 1979 to April 1985 are adjusted to the March 1980 benchmark. Data for January 1986 and beyond are adjusted to the March 1986 benchmark.

[6]Monthly data 1970-1978 for Producer Price Index-Industrial Commodities, Consumer Price Index, and Employment and Earnings SIC codes 10, 333, and 28, and quarterly data for GNP Implicit Price Deflator appear on pages 4.6-4.8 of Report 139.
Monthly data 1977-1978 for Employment and Earnings SIC Codes 10, 333, and 28 appear on page 33 of Report 147.
Monthly data 1970-1978 for Employment and Earnings SIC Code 36 appear on page 23 of Report 154.
Monthly data 1977-1980 for Producer Price Index-All Commodities, appear on page 21 of Nuexco Report 158.

[7]Monthly data 1979-1982 for all listed indices appear on page 41 of Report 184.

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